The Iron A

A Review of the Hardware, Iron and Metal Trades.

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Decorative Ironwork.

The following interesting article, by Mr. George Wallis, is from the Magazine of Art: Ironwork for domestic use in the internal arrangements, and in a measure as part of the furniture, or at least the fittings, of the houses of the period included within the dates from the fourteenth to the eighteenth century, presents many valuable and interesttures alike to the artist as to the arch-t. No doubt many of the objects then in every day use, and almost necessary to the comfort of the class of society in which the best examples were to be found, have been superseded by articles of a more convenient construction, made of materials more venient construction, made of materials more suitable to their use. Jewel caskets and iron chests, for example, may be quoted as not at all likely to have any revival in these days. Something equally—possibly even more—secure from surreptitious investigation has taken the place of the cumbrous objects belonging to the periods above mentioned; and while the art displayed in the modern decontion of such objects may be anything but while the art displayed in the modern deco-ration of such objects may be anything but satisfactory, yet convenience has its claims to attention, and in the multiplicity of wants in an age like our own, economy of time, and consequently of cost, becomes a com-pulsory matter. Hence we dispense with the elaborate decoration of a deed or plate chest, and simple security is all that we care to think of in connection with a repository for

The iron coffer numbered 4255-66 in the South Kensington museum is a notable example of this class of decorative wrought iron. It is Nuremberg work of the early part of the eighteenth century, and illustrates the "safes of the period." It shows how these repositories for valuables of all kinds were regarded as essentially a portion of the furniture of a well-garnished house, and that they were made, not to put away in corners or out-of-the-way places, but to stand as ornaments, as well as objects of use, in prominent positions; the locks, bolts and bars with which they were furnished being a sufficient justification for regarding them as safe from prying curiosity or the arts of the thief in relation to their contents. Such objects were thought worthy of the best ability of the artist-smiths of the centuries we have already indicated. This example, of which we give an illustration (n. 2) is decorated on already indicated. This example, of which we give an illustration, (p. 3) is decorated on top with appliqué scrollwork in repoussé, admirably designed and executed. These scrolls are adapted to the shapes of the panels formed by the flat bands of iron which are themselves incised with scroll ornaments, the bands giving strength to the top of the coffer, and thus forming a detail in the decoration. From the cover of the key-hole, or rather of the escutcheon which surrounds it in the the escutcheon which surrounds it in the center of the top-this cover being formed of a mask in repoussé—an ornament starts which forms a rosette. The scrolled details of this ornament run into the four panels constituting the central compartments, two panels at each end of the lid completing the design. The border-band of each is decorated sign. The border-band of each is decorated with scroll work and rosettes in bold relief; and studs, also in high relief, complete the details of the ornamentation, the effect being rich and singularly appropriate. The sides and ends are also decorated and pancled, the panel-bands being incised and studded. Boldly designed forged handles complete the two ends. The front is of the same character, while two ornamental clasps in chiseled ironwork form an excellent padlock staple. Both angles of the front are decorated with forged spirals fixed as columns, and rising from brackets resting on the front feet. The body of the coffer is supported on a stand admirably designed and executed; it is composed of four feet with chiseled iron scrolls in forged work issuing from the angles formed by each foot, with chiseled iron scrolls in forged work issuing from the angles formed by each foot, which at once strengthen the support and add to the decorative effect of the work. The lock is, as usual in these coffers, inside hd, and covers the the margin corresponding to the rim round the inside of the upper edges of the chest. This margin is decorated with a foliated tooth-like ornament, the lock itself projecting from it. The design of the lock-plate is executed in perforated sheet iron, polished, and is divided into two panels, with a boss in the center corresponding to the keyhole. In one panel is a double-headed eagle with an imperial crown, surrounded by a with an imperial crown, surrounded by a bold foliated ornament. The breast of the cagle bears a shield charged with two keys crossed and a hammer—a device of the maker. Engraved on the outer rim, in Germaker. Engraved on the outer rim, in German, is, "This lock has been made by Benedict Hild, locksmith." In the other panel a similar ornament surrounds the façade of a palace. The details of these ornaments, as also of the eagle and palace, are admirably etched. The date is quoted inside (1716). The lock has eighteen bolts, which shoot under the inside rim already mentioned.

The coffers of the sixteenth, seventeenth

and early part of the eighteenth centuries differed considerably in various countries and localities, alike in construction and deco-The example just quoted is of a class ich the whole design is legitimately adapted to iron, alike in construction and

Sometimes the panels were filled with painted devices, heraldic or symbolical, and at others a series of heads formed the decoration.

Occasionally a whole subject, historical or religious year reconstructions. a series of heads formed the decoration. Occasionally a whole subject, historical or religious, was represented, and intercepted

pieces of furniture in well-appointed houses, and were rendered as decorative as possible, the finest being invariably those which, like

and the edges of the bands "picked out" as to aid the ornamental effect as studs. The either in gold or in some darker color than that of the panels or the bands themselves. Sometimes the panels were filled with painted the completion of the series of plates to the middle. The details of this lock are very likely and tested the theorem that of the panels were filled with painted the triple of the door, as the horizontal decoration of the series of plates to the completion of the full effect, exercised the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door, as the horizontal decoration contains the fit of the door as the fit neously by the turn of the key, and they act religious, was represented, and intercepted only by the bands passing over it; for, as a claw-bolts under the inside projecting rim already stated, these chests were important pieces of furniture in well-appointed houses, and were rendered as decorative as possible, workmanship this specimen is worthy of

skill and tested the knowledge of graphic geometry of the medieval worker in iron to the full as much as the elaborate carvings in wood and stone exercised the workers in

The extent to which certain fixed articles of furniture were at once strengthened and decorated by forged ironwork of a highly and were rendered as decorative as possible, the finest being invariably those which, like our illustrative example, were the work of artist-smiths, and ironwork alike in construction and ornamentation.

As another example of this class, the casket (No. 396-'54), of sixteenth century Ger-

osses and secures each door in parallel The binding strength of these decora tion cro tions is very great. Nothing can be more simple in form and detail than these decorative adjuncts, and yet the ornamental effect is practically perfect. The finish of the ironwork by polishing contrasts admirably with the dark wood on which the ironwork is fixed, but we can conceive that when the whole was now the new oak harmonized with excellent effect with the polished mounts. The introduction of gilt brass or ormolu mounts on furniture in the period and style now known as Louis Quatorze, superseded the modest, but more legitimate iron mounts of a simpler and less ostenta-tious age, in which utility, strength and solidity were aimed at as the true basis on which decorative effects were produced. In these constructions we had science as a basis, and the ornamentation was invariably designed so as to embellish and enhance the essential construction and form to the eye, and in no sense to conceal, but rather to display, the construction. The debased style of ornamentation which came into vogue with the fripperies of the seventeenth and early eighteenth century French art ignored. arly eighteenth century French art ignored all science in construction, and undoubtedly led to the utter neglect of all true design, and the final obliteration of the workmandesigner alike in wood and metal work.

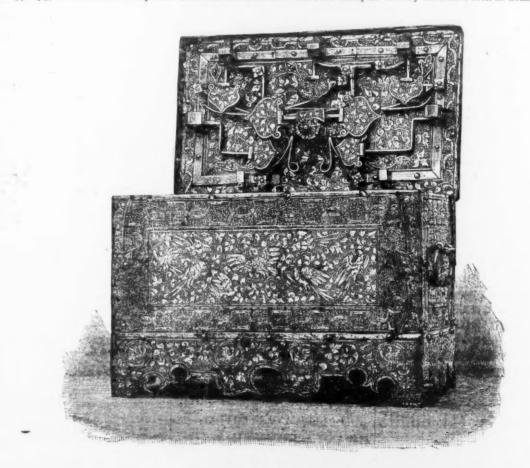
Our next subject scarcely comes within the react of wrench tiers work a work and the construction of the work and the construction of the construction o

Our next subject scarcely comes within the range of wrought iron work proper, although it is certainly decorated ironwork. This is a girandole of two lights shown on page 3. It consists of the figure of a female Triton holding a pair of sconces. The figure is in cast iron, produced after the Italian manner, although French of the seventeenth century, by the method used in bronze casting å la cere perdue. The ornaments on which the sconces are fixed, as also the sconces themselves, are of forged also the sconces themselves, are of forged iron. The double fish tails or basements to the figure are cast solid with the figure itself. The whole work is admirably executed in its style—that is, of bronzework rather than iron. The figure and cast portions are chiseled and finished with a polish which renders the whole an admirable adjunct to a meropace or a mirror, or as a bracket. A companion work has a male Triton as the subject of the figure. As a matter of technique, the combination of wrought and cast iven in this work is interesting, but the work iron in this work is interesting, but the more legitimate method is to construct the work, as a whole, of wrought iron, and then to add the figures in cast iron in such a position in the design that the riveting or screwing on of details is not necessary. The cast por-tions then take their places as an adjunct to the wrought-iron framework and decora-

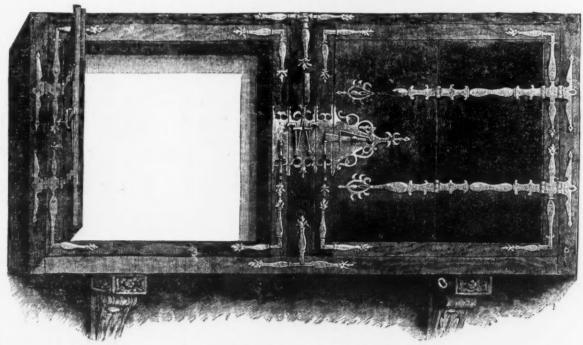
A lock and hasp (No. 4850-'58) are of a very different character, being Ital-ian work of the late sixteenth or early inn work of the late sixteenth or early seventeenth century. These are examples of the elaborate manner in which locks and door-handle plates were decorated during the latter part of the fifteenth, the whole of the sixteenth, and early part of the seventeenth centuries. The plates of flat forged iron are chiseled into the geometric forms necessary to give effect to the decorations and security to the lock, handle or hasp, of which it is at once the ornament and means of attachment. The plates are perforated by drilling and chiseling into the chequered or foliated designs. These are assisted in the details by incised work, giving the venations of the foliage, and further decorated by punching up from the back studs at stated intervals, in the manner of repoussé. The plates are arranged into the form of a St. Andrew's cross, with the locks in the center, drew's cross, with the locks in the center, the locks being also decorated with incised panel work. The effect here obtained by flat plates perforated and chiselled has a richer, but certainly a less architectural richer, but certainly a less architectural effect than that adopted by the old English workers in iron of our decorated Gothic periods, already alluded to in the remarks on the iron casket, by which an ornamental effect was built up, so to speak, by a series of perforated plates of thin metal worked out geometrically from the plain plate, the general form of the perforations, and so on, to the more complicated details of the ton. to the more complicated details of the top plate, all riveted together in such a mann as to make the heads of the rivets the finish

as to make the heads of the rivers the finish-ing detail of the whole.

The neglect into which the decorative ironwork of the periods we have endeavored to illustrate has fallen is not only to be regretted, but appears to be quite phenomenal, when we consider the skill and dexterity to which the artist smiths of the seventeenth and early portion of the eighteenth centuries had attained. Change of fashion scarcely seems to account for the facts, and man work (illustrated above), is of great interest. It is formed of plates of metal, riveted together at the angles, these angles being covered with decorated framing-plates cut to an ornamental profile, which unite with broader plates of a similar character running round the base of the casket, and form a covered by drilling, cutting a covered by drilling, cutting and sill were shown by those who designed and constructed them. Following the system by which the paneling, window tracery and by which the paneling, window tracery and by which the paneling, window tracery and tabernacte work of the best period of decorated from total constructed, thin plates of running round the base of the casket, and the constructed them. Following the sons who, in these days, bear the name with centuries had attained. Change of fashion out following the calling. In the cupboard from total constructed them. Following the system by which the paneling, window tracery and to decorate the contract of the facts, and one had only, even within the last quarter of ample of about 1550, probably Nurembeg work. It is of oak, overlaid, with polished a century, to walk through some of the older quarters of Chelsea and Kensington to discover examples of work. It is of oak, overlaid, with polished a century, to walk through some of the older quarters of Chelsea and Kensington to discover examples of work. It is of oak, overlaid, with polished a century, to walk through some of the older quarters of Chelsea and Kensington to discover examples of work. It is of oak, overlaid, with polished a century to walk through some of the older quarters of Chelsea and Kensington to discover examples of work and the control of the facts, and one had only, even within the last quarter of a more than the cut of a century to walk through some of the older quarters of challength. tion of the metal mounts to the doors of a cupboard, or possibly a cabinet fixed in a wall. The design is divided into four spaces suburbs of London rewards the admirer of



German Casket .- Sixteenth Century



German Cupboard Front .- Sixteenth Century.

DECORATIVE IRONWORK.

cut to an ornamental profile, which unite with broader plates of a similar character running round the base of the casket, and form an ornamental foot or rest for the The surface decorations consist of the surface decoration decorations consist of the surface d form an ornamental foot or rest for the whole. The surface decorations consist of an elaborated series of floriated designs, with birds introduced in the central portion, the birds introduced in the central portion that the contral portion is a series of plates were laid over each other cupboard, or possibly a cabinet made in the cupboard, or possibly a cabinet made in the cupboard of plates are laid over each other cupboard, or possibly a cabinet made in the cupboard of plates are laid over each other cupboard, or possibly a cabinet made in the cupboard of plates are laid over each other cupboard, or possibly a cabinet made in the cupboard of plates are laid over each other cupboard, or possibly a cabinet made in the cupboard of plates are laid over each other cupboard, or possibly a cabinet made in the cupboard of plates are laid over each other cupboard or possibly a cabinet made in the cupboard or possib adapted to iron, alike in construction and decoration. In Germany, Flanders, and some birds introduced in the central portion, the borders consisting of cartouches. The top is plain construction, being simply an iron chest body, bound round by broad bands of iron riveted through the construction plates, were in common use. Not unfrequently they were painted and gilt, the bands being of one color, and the panels formed by these bands being of another; the rivets were gilt,

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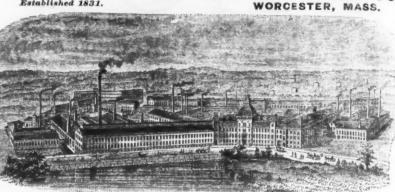


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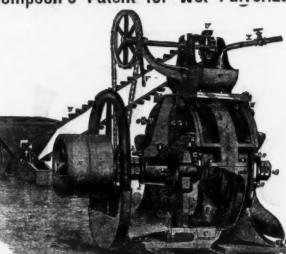


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vival of wrought iron work for ornamental purposes, and it appears, so far, to be chiefly upon the lines of the old English methods, rather than of the Italian, Flemish or Ger-man. Whether this will stimulate the halfrealized attempts to bring back this old English art industry to the smithies of our own country it is difficult to say. Hitherto the attempts have been mostly overdone, and the simplicity of construction and the ornathe simplicity of construction and the ornamentation actually growing out of that construction of the old examples appear not to have been understood; and "stuck on" details intended for ornament, but having little relation to a true ensemble, have degraded some really good work, as regards manipulation and finish. The commercial aspect of such a revival is not a cheering one. The fact that very decorative works in iron can be produced in malleable cast iron is de-

encouragement for similar enterprises offered by Congress

A Canadian Parliamentary Debate on the National Policy.

The following extract from the debate in the Ottawa House of Commons on the 21st of February will be read with interest:

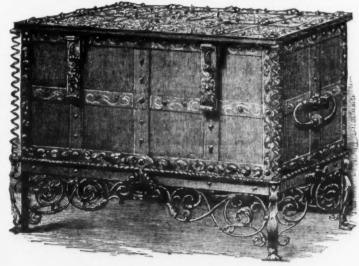
Sir Leonard Tilley laid on the table the report of the Commissioners appointed to inquire into the working of the mills and



French Girandole .- Seventeenth Century.

cidedly against the economic use of orna- | "The Governor-General transmits to the mental wrought iron, except in cases where a single work, or at most a very few repetitions of the same design may be wanted. When the design is available for extended application—such as when applied to railings and decorative mounts for copings—malleable wrought iron has the advantage; and when the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought; and the design is really adapted to casting, and is not a mere slayish imitation of wrought. is not a mere slavish imitation of wroughtire iron details, no sound or common-sense be referred to a Committee of Supply. æsthetic objection can be taken to its use. The material is tough, and therefore not easily broken. Its surface is even, and it The material is tough, and therefore not easily broken. Its surface is even, and it can be cast sufficiently thin with safety to give much of the effect of wrought iron when forged hot. Of course the more delicate decan be cast sufficiently thin with safety to give much of the effect of wrought iron when

Carried.



German Coffer,-Early Eighteenth Century

tails of forged ironwork, such as tendrils, | item of \$11,200 for the Governor-General's rosettes in repoussé, and even the admirable decorative effects produced by rivets in the older works, are impossible. This, however, is the penalty which art has to pay so frequently for the advance of science as applied to the industrial arts.

Sir Richard Cartwright, in the absence of the Market of Strategies of the Covernor-General's Secretary's Office.

The Committee rose, reported the result and obtained leave to sit again on Friday.

Sir Richard Cartwright, in the absence of the Market of Strategies of the Covernor-General's Secretary's Office.

The second steamer of the new line established between Canada and Brazil, via the West India Islands, is now nearly due at Halifax, and no efforts are spared to promote trade between those points. Mr. Wm. Darley Bentley, Consulate-General of the Empire of Brazil, has issued a very comprehensive circular to the merchants of the Dominion, the object of which is to afford them an opportunity of knowing precisely the class of goods which can be had in the British West Indies, Brazil and River Plate, and, on the other hand, the products and manufactures of Canada which would find a ready market there. With subsidies from two governments, in addition to the French bonnty received by the company concerned, this enterprise ought to succeed. But what

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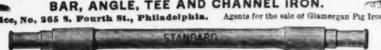
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was not limited to Great Britain, and was rather pleased that it was otherwise. Still, rather pieased that it was otherwise. Still, these statements were misleading. He would be glad if the increase were wholly in our products and manufactures, but it was not the fact, while it was a fact that the exports of agricultural products and products of the forest largely increased in the last year, the manufactures presented a gloomy picture. In fact, the export of our manufactures were In fact, the export of our manufactures was steadily diminishing before 1877, the liberal course of the former ministry in aiding the manufacturers of this country (laughter) to exhibit at the world's fairs in Philadelphia, Melbourne and Paris products of our manufacturing industries hed exhibit at large facturing industries had established a large export trade, which would have gone on inexport trade, which would have gone on increasing had that government remained in power. The exports of the products of the forest, animals and their products and agricultural products, had increased \$30,321,916 in the last two years, thanks to a merciful Providence, with which honorable gentlemen could not interfere; but where they could they had interfered with the blessings of Providence and the export of manufactured. of Providence, and the export of manufactured goods had decreased since 1878 by \$1,052,-

foods and decreased since 1873 by \$1,052,510. He wanted to see the manufacturers unhampered by the present tariff, but under a revenue tariff free to produce cheaper at home and to compete with foreign manufacturers abroad. Among the manufactures, the export of which had decreased, were some of our most important industries, while from those which had increased in export, from those which had increased in export, scrap iron and rags should be deducted, as they caused no employment of labor. The decreases to which he had referred had been going on so that less was exported in 1881 than in 1880, and less in 1880 than in 1879. In a short time, under the management of honorable gentlemen, we would have to abandon our proud boast that our manufacturers were able to meet those of other countries in the markets of the world. It was not that our manufacturers were lacking in brain and onterprise, but because they had been handicapped by the tariff of the honorable gentlemen opposite. It could not be said that this decrease in the estimates was due to the increase of home consumption, for while there had been a decrease in the increase of pig had been a decrease in the increase of pig iron, cottons, boots and shoes, machinery, sewing machines, woolens and other manufactures, there had been also an increase in the imports; but the secret was that the raw material was taxed, and both manufacturers and consumers were suffering under a tariff which was framed on its principle, but was simply a plagiarism from the United States tariff, which was shown to be utterly unsuited to our requirements. The reason for the diminution of the exports was not that our manufacturers had obtained greater control of the home market, but that they were so handicapped that they could no longer produce cheaply at home, or compete successfully abroad. When the opposition said the tax on raw materials would produce said the tax on raw materials would produce this result, they were told it would be remedied by the payment of drawbacks on export goods. Last year a return for 21 months was brought down showing that \$15,379 had been paid for drawbacks, but \$12,000 of this was on lobster cans, and, in fact, not one cent was for the raw material used in any of our great manufactures. He knew of no remedy but a return to a sound revenue tariff, which afforded the manufacturers all the advantages to which they were entitled. the advantages to which they were entitled. In the town he (Mr. Paterson) represented, which was a large manufacturing town, every large manufacturer was his political supporter and the opponent of the honorable gentleman opposite. Last year one of them paid \$6000 more duty than they would have paid under the Mackenzie tariff. The manufacturers the Mackenzie tariff. The manufacturers had nothing to thank this Government for, unless it were the sugar refinery and one or two more things, and while the manufacturers were not being benefited, the consumers suffered from the increased prices which they had to pay. (Applause).

Mr. Plumb said the arguments of the honorable gentleman appeared to be that because some articles of export had decreased therefore the national policy had injured the manufacturers. He, however, considered

manufacturers. He, however, considered that it was a sign of wealth if we were not only to utilize our own products, but to pur-chase from abroad. The Government had not pretended to build a Chinese wall round this country and shut out all foreign manufactures; they simply desired to give reasonable protection to our home industries, and able protection to our home industries, and that had been opposed by honorable gentlemen oppose. He (Mr. Paterson) had stated that the industries in his own town were suffering, but the fact was Brantford had greatly benefited by the national policy. Mr Paterson said he had stated they were suffering in their export trade only.

Mr. Plumb ridiculed the idea that manufactures were flourishing under the tariff of the previous government, and pointed out

the previous government, and pointed out that the whole of the present tariff was not imposed by the present government. The average increase had been stated to be only 5 per cent.; the fact was that the opposi-tion were bitterly opposed to the national

Mr. Orton rose to speak, when Mr. Mac-kenzie asked the honorable gentleman to allow some of the Ministers to answer Mr. Paterson's speech.

Hon. Mr. Bowell said the Ministers would take their own opportunity to reply. Hon. Mr. Mackenzie: You are afraid to

do it to-day.

Mr. Orton said that the honorable mem ber's statements proved that the national policy had succeeded in giving our manufac-turers control of the home market. The production of manufactured goods in this country had very largely increased, and the beople, being more prosperous, had been able to purchase more largely. The reason why more applications had not been made for drawbacks was that the manufacturers were unable to produce fast enough to supply

unable to produce fast enough to supply our own people.

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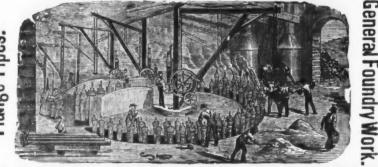
unable to produce fast enough to supply our own people.

Mr. Hesson referred to the generally prospersus condition of the country, and alleged that in Brantford, the honorable gentleman's own city, the manufacturers were more prospersus than they ever expected to be.

Mr. Paterson denied that he had said the manufacturers were not prospering. He had said they were hampered in their export trade. The manufacturers were never enjoying more prosperity than they were traday (Ministerial cheers), but every class was

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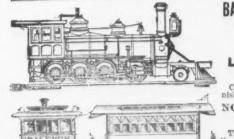
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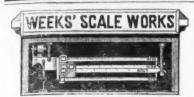
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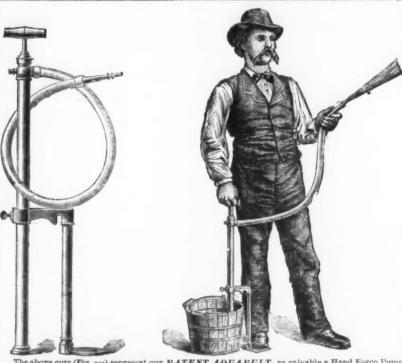
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Hon. Mr. Bowell said it was not his intention to follow the honorable gentleman in the details of his speech. If honorable gentlemen would agree as to what their policy was, it would be better for themselves and for the country. The member for Center Huron had said almost every manufacturer who had been protected was a highway robber. The member for Lambton had barked beek a great deal gives his appearance in purden back a great deal since his speech in Dundee, when he was such an ardent free trader. Hon. Mr. Mackenzie: No, I have made

o change whatever.

Hon. Mr. Bowell said the honorable gentleman proposed now to lop off the branches of the tariff one by one, instead of cutting it

the tariff one by one, instead of cutting it down at one fell swoop.

Hon. Mr. Mackenzie: I never said so.

Hon. Mr. Bowell said if some export had decreased it was because there was a large consumption at home. Under the previous government the manufacturers had to send their products out of the country to get a market. The inter-provincial trade had almost doubled since the tariff had been in force, and the goods manufactured in Ontario and Quebec, if not sent abroad were sent to the Maritime Provinces and to the Northwest and Manitoba. This was proved by the fact that there was not a manufacturing industry that there was not a manufacturing industry in this country that was not working to its utmost capacity. A gentleman who had been a great free-trader in theory had recently, after traveling in the Northwest, told him that he had changed his views because he saw such a large quantity of Ontario manufacturers in that distant section of the country. try. He could admire Parnell when he advised his countrymen to purchase no goods except of their own manufacture, and was sure the people of this country would regard with disapprobation the advice given by the member for West Durham to the people of the Maritime Provinces to purchase their goods in the United States. Hon. Mr. Anglin: I never said so. I was

Hon. Mr. Bowell: I don't know that that is an evidence of the fact. He (the speaker) promised to bring down the return asked

Mr. Charlton moved the adjournment of the debate. Carried.

Bituminous Coal and Iron Ore Statistics from the Census.

Professor Pumpelly, special agent of the Census, has submitted his preliminary report on the production of bituminous coal in the

or mood pountary as rono	
Bitumnous: Appalachian Field Western Field (Illinois, Indiana, &c.) Michigan Field	8,721,101
Triassic Field (Virginia and North Carc-,	
lina)	
Iowa and Kansas Field	2,232,458
All Fields west of rooth Meridian	1,477,730
Total Bituminous	43,430,587
Pennsylvania 28 640,813	
Rhode Island 6,176	
Total Anthracite	28,646,995

Grand total of coal production of the United States for the year ending June 1, 1880.... Grand total of hands employed in coal

The production of coal in England in 1880 The production of coal in England in 1880 was 146,812,122 tons of 2240 pounds. The number of collieries in England was 3880 and in the United States 3764. The acreage of coal land thus far discovered west of the 100th meridian amounts to but 33,001 acres. This is in California, Colorado, Montana, Oregon, Washington and Wyoming. Of the total, Colorado has 23,592 acres. The acreage of coal lands east of the 100th meridian available and attached to working establishments amounts to 410,642 acres. This acreage is divided up as follows: Alabama. 4005. available and attached to working establishments amounts to 410,642 acres. This acreage is divided up as follows: Alabama, 4995 acres; Arkansas, 81; Georgia, 16,028; Illinois, 55,051; Indiana, 10,407; Iowa, 20,128; Kansas, 1600; Kentucky, 34,635; Maryland, 15,112; Michigan, 107; Missouri, 3715; Nebraska, 1; North Carolina, 1200; Ohio, 58,639; Pennsylvania, 118,311; Tennessee, 23,743; Virginia, 230; West Virginia, 46,659. Pennsylvania produces 44,665 per cent., or nearly one-half of the aggregate production for the United States. The three leading States of Pennsylvania, Illinois and Ohio produce nearly three-fourths, and the eight leading States, Pennsylvania, Illinois, Ohio, Maryland, West Virginia, Indiana, Iowa and Kentucky nearly nineteen-twentieths of the entire product. The United States, exclusive nearly one-half of the aggregate production for the United States. The three leading States of Pennsylvania, Illinois and Ohio produce nearly three-fourths, and the eight leading States, Pennsylvania, Illinois, Ohio, Maryland, West Virginia, Indiana, Iowa and Kentucky nearly nineteen-twentieths of the entire product. The United States, exclusive of the territories, has gained 134.4 per cent. in weight of product. The average price per ton has fallen from \$1.99 to \$1.22 during the past decade. The price for 1870 was reckoned in paper dollars.

In South Yorkshire the seams of coal are well suited for coke-making, and during last year there was a considerable addition made to the number of ovens connected with several collieries, and in addition the best appliances, such as Shepperd's patent continueresting and curious facts. It appears as between the bituminous coal industry and the iron ore mining industry, the former takes from the earth a product worth 140 per cent.

enjoying the same. The prosperity, however, was not due to the national policy, but in spite of it. (Opposition cheers.)

Hon. Mr. Bowell said it was not his intenthat the furnace had been built directly over a solid body of red hematite. It may be surprising to some people how the builders of the Champion Furnace could have laid its foundation walls upon a body of ore, and at the same time have been ignorant of its presence. The Marquette Mining Journal, however, is of the opinion that this was due to the fact that probably not more than half a dozen men, aside from the few miners then employed in the district, knew hematite when they saw it. At that time very little when they saw it. At that time very little ore, other than hard red specular and a small amount of magnetic had been mined —in fact, no soft hematite pits had been opened, except at the Jackson and Lake Superior mines—and, consequently, it is not at all strange that the builders of the Cham-pion Furnace did not recognize the character of the ground in which its foundations were laid. This last discovery, with those recently made by the Atlantic Iron Company, would seem to indicate large probabilities in this comparatively new field of production.

The Coke Trade in England.

Durham County, England, has for years been the greatest coke-producing district in the United Kingdom, several thousand ovens having been in constant operation, sending their products into iron-making districts at considerable distances. Yorkshire, Derbyshire and several other counties actively expected in the production of vicines for engaged in the production of pig iron form-erly depended upon Durham for their coke supplies, this dependence, however, having gradually given way in favor of other coal-mining centers where coke has been extenmining centers where coke has been extensively made for a number of years. Unfortunately, as regards the latter, but little attention was paid to the production of a fine quality of coke until within the past few years, when colliery owners found that it would pay them to make coke suitable for iron smelting in particular, so as to equal the quality of the Durham product, which, as the rule, has been of a good and uniform character. Nearly 5,000,000 tons have been annually turned out in the Durham district, part of this large quantity having been sent to different portions of the country. The cost of transportation in these instances has always been an important item to the purchasers, who, nevertheless, greatly prechasers, who, nevertheless, greatly pre-ferred the coke to that produced in other counties. There are practically two zones of combustion in blast furnaces—one at the tuyeres and the other at the top of the furnaces, where the gaseous matter, acting on the oxide of iron, generates carbonic acid; this attacks the carbon in the upper zone, and the softer and more friable the coke, the more easily it is attacked and consumed, more easily it is attacked and consumed, without performing any useful work whatever in the smelting operation. This shows how essential it is that coke should be of a certain density, and consumers were consequently forced to satisfy their demand by resorting to the supply from Durham County, this coke being of a superior quality, and especially adapted for use in the blast furnace. In the West Riding of Yorkshire, as well as in other districts, the coke formerly made was of a decidedly inferior quality, but now the colliery owners have adopted the best appliances for turning out a superior article, and it has been found have adopted the best appliances for turning out a superior article, and it has been found by grinding, picking and washing the coal that coke can be produced as good as the Durham. While this improvement has been going on, the Durham coke has rather deteriorated. Mr. Richards, who may be looked upon as an authority on the subject, not long since stated that it could not be denied that large tracts of the best coking coal. nied that large tracts of the best coking coal in the county of Durham have been worked out, and although there was still a very large quantity of good coking coal left, yet some of the inferior seams were being largely worked, very little attention being paid to the clearing of the coals from these inferior seams. He also expressed the opinion that the coke was not generally so good now as it was a few years ago, and "this was proved was a few years ago, and "this was proved by the increased quantity required per ton of pig iron made." The value of hard coke to the iron manufacturer has been shown to consist in a good deal more than its mechan-ical strength. The Durham coke is now find-ing a number of competitors, as may be seen from the fact that at the iron works in Lin-colpships, where it was extensively used.

the iron ore mining industry, the former takes from the earth a product worth 140 per cent. more, employs 205 per cent. more hands and 46 per cent. more capital, uses 161 per cent. more materials and pays 222 per cent. more wages. The increase in the tonnage of the iron ore mined during the census year is 136 per cent. as compared with the census year 1870, showing that these two great divisions of mineral production keep pace with each other and are advancing nearly twice as fast as the production of anthracite. The reason for this is that in the former cases new fields are laid under contribution from time to time as railways are extended, whereas anthracite is restricted to its original area. Iron is mined in 135 counties and bituminous coal in 314 counties east of the rooth meridian. will stand comparison with the best that is sent out of Durham. By crushing the coal malleable, fine Gray Iron and Steel Castings made from patterns to order. Special attention given to Tinning, Bronzing, Coppering, Japanning and Fitting. A large lies of Carriage and Wagon Castings constantly on hand for the trade.

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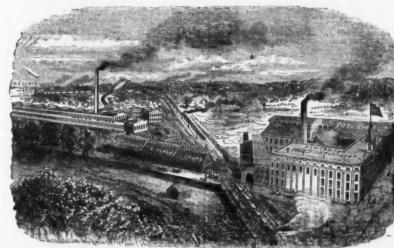
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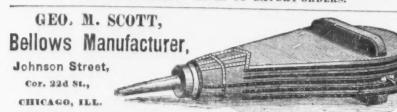
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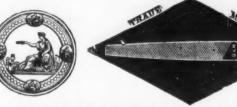
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ion of work and labor saving. We now offer them with the latest improvements, and will apply to forging and grinding other articles of tapering or otherwise irregular form.

Works at Woodside, NEWARK, N. J.

THRIFT FILE WORKS,



65, 67 and 69 So. Canal St., Chicago,

STOVE REPAIRS.



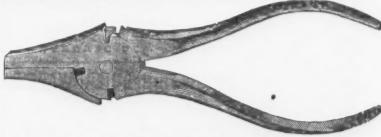
ESTABLISHED 1845.

The annexed cut shows one of the many styles of Coffee Mills of our manufacture, especially adapted to Grocers' use and all retailers of coffee. They are highly ornamental, and workmanship of the very best. We make more than 30 styles. ALSO LANE'S PORTABLE COFFEE ROASTER

Will reast 30 to 49 lbs at once, and can be used as a stove at other times. Send for descriptive list to Manufacturers. LANE BROS., Millbrook, N. Y.

Also sold by leading wholesale houses.

Our agents, Graham & Haines, 123 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.



M. KING & WATERFORD, N. Y.,

Manufacturers of the BUTTONS PATENT PLIER COMBINED." CUTTER AND

Specially Adapted for Use on Wire Fence. Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps.

Hand, Nut and Screw Taps, Pipe Taps and Reamers.

Price List on application.

Established by Daniel B, Kine, 1820.

A. FIELD & SONS,

TAUNTON, MASS.,

MANUFACTURERS OF

AMERICAN AND FRENCH

WIRE NAILS

TACKS, SHOE NAILS,

And Every Variety of Small Nails.

Offices & Factories at Taunton, Mass.

Warehouse at 78 Chambers St., New York,

where may be found a full assortment of Tacks, Brads, Wire Nails, &c., for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above-named goods made from sample to order.

A SILVER MEDAL has been awarded above goods at the Paris Exposition, being the only medal awarded any American manufacturer of Tacks and Wire Nails.

DUC'S PREMIUM ELEVATOR BUCKET.



ALWAYS FIRST COMPETITIVE



PREMIUM IN

TESTS.



The Storehouse Bucket, in sizes from 12 to 17 inches This Bucket is struck out from the best charcoal iron; consequently is very durable. It requires 50 per cent. less power to run it than the old-fashloned square bucket and will outwear half a dozen of them. Over 300,000 are now in use by the principal Millers, Brewers, Mutaters and Manufacturers at home and abread. It is the best Bucket made.

CAUTION.—The popularity of the DUOKET has caused many manufacturers of the old style of Elevator Bucket to closely imitate its spherical shape. We warn all parties against patronizing infringers of our patents, as they will be held accountable. Send for obvular. Address

T. F. ROWLAND, Sole Manufacturer, Continental Works, BROOKLYN. N. Y.

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We carry a large stock of the various sizes of Tinners', Carriage, Wagon, Hame, Belt, Barrel, Safe and Tank Rivets, and make promptly to order all sizes not larger than 7-16 inch diameter. We have a capacity of two tons of the various sizes of small Rivets per day of ten hours. Freight allowed to all points on or east of the Mississippi River. Correspondence with buyers solicited.

WILLIAM H. DUNBAR, President.

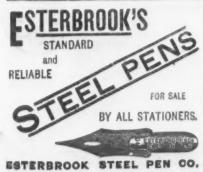
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John Chatillon & Sons, 91 and 93 CLIFF ST., N. Y. Our Springs are used by the U.S. Govern-ment and various Meterological and other Scientific Institutions.



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THE ANSONIA CORRUGATED STOVE PLATFORM



With Patented O. G. Border, ROUND ZINC. 27, 30, 32, 34, 36 inch.

Manufactured of heavy metal, requiring no nailing or lining, the edge retaining its form. Superior pattern, finish and quality. Price as low as any.

fond for List and Discount Packed 12 in each case

ELECTRIC PURE

ANSONIA BRASS AND COPPER COMPANY,

For Magnets, Telegraphs, Telephones, &c. bare wire with H. Splitdorf's patented Liquid Insulation, covered with cotton or silk All sizes of Bare and Covered Wire in Stock. The conductivity of every bundle tested and warranted

THE ANSONIA WROUGHT GONGS, For Clocks, Indicators, Telephones, Call Bells, Bell Punches, Steamboat and Railroad Use. Burnished or Nickel Plated

ANSONIA BRASS AND COPPER CO., 19 Cliff St., New York.

HORSE NAILS.

Hot Forged, from Norway Iron, Warranted Best Quality, Pointed and Polished.

HOWE & OO., Troy, N. Y., Sole Agents.

The Junk Business.

In a certain sense the world's prosperity may be said to depend upon the junk dealers, since they are the great purveyors for ore, since they are the great purveyors for our paper mills. Our paper mills run our printing presses, and the press is among the foundations of our civilized prosper-ity. In New York City alone there are something like 200 junk shops, wholesale and retail. There are, in addition, about 1110 licensed junkmen, who go out with carts every day and collect refuse of various kinds from door to door. The number of unli-censed rag-pickers is estimated by the officers of the License Bureau to be at least 1000, a number which to an observer is manifestly much too small, since these rag-pickers, to all appearances, considerably outnumber the li-censed junkmen. Some of the junk shops employ from fifty to eighty persons in collecting, weighing, sorting and packing the stuff, and, at a moderate estimate, at least 10,000 people in this city are dependent upon this business for their livelihood. It is a curious fact, but one which grows out of the necessities of the case, that the whole business is systematized to a degree quite marvelous to an outsider. Every description of pasteboard, rag, bottle, waste paper or piece of old metal has its fixed price. In some of the large junk shops of this city there are no less than seventeen grades of wares, differing in price perhaps by % of a cent per pound. In paper stock there is, for example, No. I white, which means the trimmings and clippings of white paper made from rags. These are mostly obtained from the bookbinders, and are worth 3 cents per pound. Then comes No. 2 white. This embraces circulars, spoiled sheets and other similar kinds, and is worth only 2½ cents per pound, and so on, the prices going down to the heavy brown paper made from ropes and book covers, that are worth only from ¾ to ½ cent per pound. Old tin, rags, bottles and every description of junkware has the same system of subdivision and succession of By force of experience the weigher: in these shops recognize instantly the quality of the stuff they are buying, and call out at once to the cashier whether it is one or two-cent stuff, or whatever it is worth. It is only in rare cases that the junk man

or rag-picker drives a hard bargain or quib-bles over the fraction of a cent a pound. As As a rule, he makes no demur at the prices assigned. The most valuable stuff is the old garments, the cloth of which, after being ungarments, the cloth of which, after being unseamed and ripped, is worth from 10 to 15 cents per pound to the shoddy men. A junkman who has a lucky day and finds plenty of old cloth and rags, good bottles and the best sort of paper, it is said will be able to make from \$4 to \$5. A wet day, however, will greatly diminish the profits. The bulk of the junkmen are said to be Irishmen, though there are a goodly number of Germans in the business. The unlicensed ragnickers seem to be mostly Italians. They pickers seem to be mostly Italians. They certainly form an immense colony in Crosby and Mulberry streets. They collect from the dumps and ash barrels what the other and more high-toned rag-pickers would leave behind. The stuff collected by the Italians is said to be so filthy that most of it has to be washed before it can be sold. So dirty, indeed, is this junk that the best dealers do not like to accept it from them, because the manufacturers declare it to be too dirty. The business is an apparently lucrative one, as rumors are current of junkmen being worth anywhere from \$50,000 to \$200,000, who still attend to the details of the business. The business in bottles and in sheet metals is large, the latter going to the wire manufacturers. Scarcely a medicine bottle is thrown away, most of them being washed out and restored to the trade as new. An east side bottle dealer has a monopoly of this business. The Italians sell the greass An east side bottle dealer has a monopoly of this business. The Italians sell the grease and fat that they pick up to rendering establishments, and it is hinted that much of it reappears as lard. The bones may be either ground for manure, or the large ones cut up for buttons and other similar purposes. Old hats are stripped, recovered, reopened, and the east side manufacturer who buys the hat from the recognition for 10 or 15 cents resells. shoes are worth anything from 5 cents up-ward, and go to the Baxter street shoe-makers, who use them as far as possible in making up their new shoes that they sell for

Making up their new shoes that they sell for \$1 per pair.

At one time old newspapers were in great demand at the paper mills, but so much paper is now made from wood, straw, clay, salt hay, &c., that their price has gone down very much. Their principal value, at the present time, is for packing purposes, and for this they must be flat and in comparatively good condition. At the present time when seld simply as junk and in comparatively good condition. At the present time, when sold simply as junk, they bring about 1½ cents per pound. When the Mechanics' Bank, at one time, sold out 50 years' accumulation of old ledgers, checks, letters, drafts, &c., \$1900 was paid for the collection, yet the same man who bought the \$1900 lot from the big bank is ready to deal with the boy bringing in a pound lot of similar goods which, at the market rates, would bring just one cent. bring just one cent.

The newspapers tell remarkable stories about lucky finds made in refuse heaps by junk dealers and their employees; how on one occasion the papers relating to the secret correspondence between Jerome Bonaparte and Miss Paterson, of Baltimore, and the subsequent negotiations by the Bonaparte and Paterson families, were found in the waste paper of the old warehouse of the bride's father. In this strange manner the bride's father. In this strange manner the entire history of this interesting affair was said to have been found, and formed the subject of a book published seven or eight years ago. A Maiden Lane jeweler who lost a diamond ring, had it returned to him by the man to whom he sold his wastepaper stock. The letter from the jeweler expresses thanks, and is often shown by the dealer. Another case is mentioned where indorsed checks to the amount of \$3000 were found among the waste paper of a well-known city bank, and it is said that the owner, unaware of his loss, had not stopped payment, and the checks would have been paid had they been presented. Penknives, postage stamps, scissors, &c., are among the daily finds. Money, however, they say comes rarely. Hard cash is about the only thing that peeple will take the trouble te thereughly search for when it disappears.

All sorts of queer things find their way into the junk shop, and autographs and other things of the kind form no small portion of the foreman's pickings. Some junk shops make a regular business of old sewing machines. The price at the present time, however, is very low, 75 cents, we believe, being about the highest rate, though we think they have been paid as high as \$1.50

Hyde's Improved Centering Machine.

Fig. 1 of the accompanying illustrations gives a general view of a new and improved centering machine recently introduced by the George Place Machinery Agency, No. 121 Chambers street, New York City, which has several valuable features that distinguish it from other machines of the same general character. Fig. 2 is a detail of the centering chuck, and so clearly shows the princi

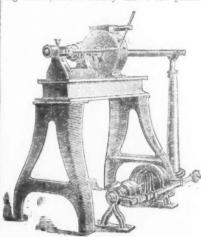


Fig. 1.—General View, showing the Adjustable Forked Rest.

ples upon which the device is constructed that a brief description will suffice. The jaws, which are of hardened steel, are 2% inches wide by I inch thick, and are pivoted as shown in the engraving. They are operated simultaneously by the fixed screw at the top, which, by means of the movable nut, gives motion to a ving inches of the great that gives motion to a ring inside of the case that communicates with each of the jaws by means of studs suitably fitted. The jaws open sufficiently to admit shafts up to 41/2

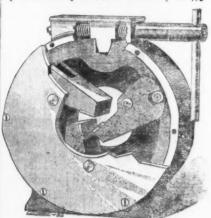


Fig. 2.—Enlarged Detail Through the Center, ing Chuck.

inches in diameter, and fit accurately on diinches in diameter, and fit accurately on diameters as small as ½ inch. The spindle which carries the centering drill is of steel, and is moved forward and backward by means of a hand lever, and, being feathered, revolves with the cone. This lever, instead of working directly with the rack, communicates motion to it by means of a pinfon interposed between the two parts. By this means the spindle is operated by a pulling instead of a pushing motion, which is a desirable improvement over many of the tools in hats are stripped, the east side manufacturer who buys the nat the east side manufacturer who buys the nat from the rag-picker for 10 or 15 cents resells instead of a pushing motion, which is a desiration in rejuvenated shape for \$1.50 or \$2. Old shoes are worth anything from 5 cents upathoes are worth anything from 5 cent and is abstantial in controller. The resident of the shafting being centered, is adjustable as to hight. The materials employed and the construction are of the best, and the manufacturers do not hesitate to fully guarantee the tool.

> A case that is being regarded with much interest in the coke region is occupying the attention of the Fayette County courts. It is the case of David Torrence against Coch-ran, Keister & Co. Torrence is a farmer ran, Keister & Co. Torrence is a farmer whose land adjoins the coke furnaces operwhose land adjoins the coke furnaces operated by the Abam Company, and he has brought suit to recover damages which he claims his property has sustained by the presence of the coke works. He alleges that the smoke from the ovens has so affected the surface of his land as to greatly diminish its productiveness for agricultural purposes. He claims, for instance, that not only is his grass crop made lighter, but even that which grass crop made lighter, but even that which does grow is so vitiated that the effects of the smoke and soot are perceptible in the milk and butter that come from the cows which graze on his farm. He lays his danages at \$5000. The case has been in progress some days and a verdict has probably been reached. The result is watched with much interest, since it is a test case. If the plaintiff should win it would likely open the way for a large amount of litigation, as the clouds of smoke that settle down over that region have been the source of much annoy-

RUSSELL & ERWIN MANUFACTURING COMPANY,

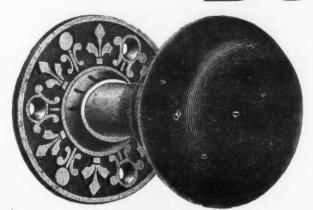
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Manufacturers of BUILDERS' AND OTHER HARDWARE,
IRON AND BRASS WOOD AND MACHINE SCREWS.

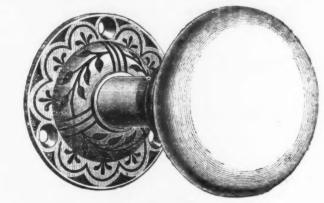
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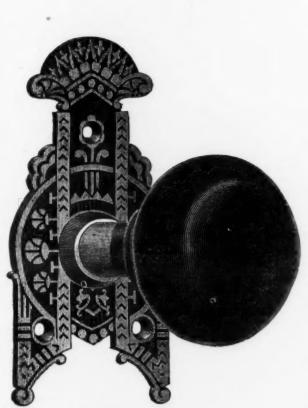
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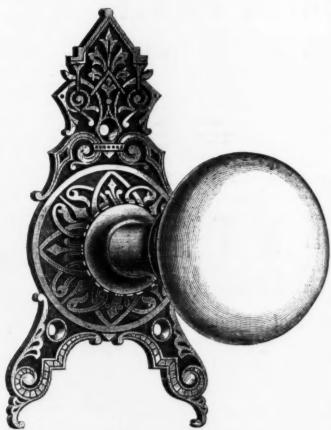
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Store Door Handles, Nos. 8001, 8002.



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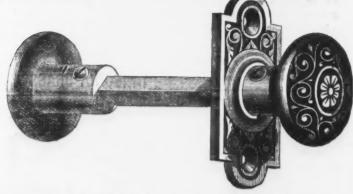
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For I Box 211

SPECI Gea IMPROV

JA FROGRES Also



Screen Door Latch, Nos. 8500, 8501.





AST JOOS & BO.
SPRINGFIELD.O.

STATEMENT

HILL'S TRIANGULAR HOG RINGS

Sold to the Jobbing Trade in the Cities and States named, from Dec. 1, 1880, to Dec. 1, 1881.

	Dec.	1, 1001.	
San Francisco	170,400	Omaha	54,000
California	170,400	Nebraska	54,000
Alton	7,200	New Brunswick.	14,400
Bloomington Chicago3	32,400	New Jersey	14,400
Danville	18,000	Auburn	14,400
Decatur	410,400	Buffalo	105,600
Jacksonville	31,200	Elmira	14,400
Pekin	14,400	New York City.	52,900
Paris	513,600	Poughkeepsie Syracuse	28,800 43,600
Opincy	108,000	Rochester	31,200
Quincy Rock Island	105,600	Utica	5,000
Springfield	89,400		
-		New York	295,900
Illinois5	,350,200	Cincinnati	961,000
Franklin	14,400	Cleveland	301,200
Ft. Wayne	43,200	Columbus	196,800
Indianapolis	645,600	Dayton	98,400
La Fayette	195,600	Delaware	14,400
Richmond	32,400	Gallipolis Hillsboro	10,800
Terro meno	3-14	Sandusky	7,200
Indiana	945,600	Springfield	2,400
Burlington	158,400	Toledo	127,800
Cedar Rapids	14,400	WashingtonC.H.	72,000
Davenport	223,200	Zanesville	63,600
Des Moines	187,200	Ohio	0
Dubuque	28,800	Ошто	,071,200
Ft. Dodge	50,400	Portland	36,000
McGregor	7,200		
Ottumwa	28,800	Oregon	36,000
		Allegheny City.	14,400
Iowa	770,400	Philadelphia	343,200
Atchison	192,400	Pittsburgh	21,600
Leavenworth	18,000	Reading	19,200
Kansas	140,400	Penna	398,400
Louisville	190,800	Knoxville	62,400
Maysville	33,600	Nashville	4,800
Kentucky	224,400	Tennessee	67,200
Baltimore	396,000	Lynchburg	14,400
Maryland	396,000	Richmond	13,200
Detroit	180,600	Witnesteele	
Detroit	209,000	Virginia	37,600
Michigan	189,600	Wheeling	234,000
St. Paul Winona	18,000	W. Virginia.	234,000
985 m m n n n n n n		Fond du Lac	6,000
Minnesota	27,600	La Crosse	14,400
Kansas City	201,600	Milwaukee	385,200
St. Joseph St. Louis	273,000	Wisconsin.	405,600
Sedalia	28,800	or incommin.	403,000
Springfield	14,400		
		Total 13,367	100
Missouri	1,743,200	10001	,100

100,000,000 of HILL'STri-Rings have been sold in nine years, consuming 550,000 pounds of wire, measuring 3400 miles. For sale by Hardware Dealers everywhere.

W. HILL & CO., Decatur, Ill.



e Cheapest and Best. Price, \$12. LITTLE GIANT MFG. CO., Send for circular. Millport, Chemung Co., N. Y.

PHOSPHOR-BRONZE!

PHOSPHOR-TIN

Phosphor-Bronze is daily gaining favor with manufacturers who have to use a metal of great toughness and durability, of fine grain, high ten sile strength and durability, of fine grain, high ten sile strength and durability and is acknowledged far superfor to any other alloy on account of the readiness with which it takes a polish, its elasticity, fluidity and beauty of color. Its high price, however, has so far prevented the use of it to so large an extent as its merit would warrant. For the first time an article is offered herewith which makes it easy for everybody to manufacture his own Phosphor-Bronze of the grade at is wanted, by the simple process of meitting. This article is PHOSPHOR-TIN. By melting a very small quantity of it with copper an excellent Phosphor-Bronze is obtained at a much cheaper price than the ready made Phosphor-Bronze can be had in the market. A trial ought to be made by everybody who is using it.

A. KAUFMANN, 36 Park Place, New York, Sole Agent for the United States and Canada. For pamphlets please address the above, P. O. Box 2110, New York.

THE DUPLEX INJECTOR.



Known. Unequaled for sim-plicity and always re-liable. Does not require adjustment for varying pressures of steam.
Will start when the injector is hot.
Less liable to get out of order than a pump.
Always delivers water hot to the boiler.

JAMES JENKS. 16 & 18 Atwater St., East, DETROIT, MICH.

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SPECIAL TOOLS AND MACHINERY. Gear Cutting Attachments for Lathes

IMPROVED WORK HOLDERS, ARBORS, DRILL PRESSES, EMERY GRINDERS, &c. JACKSON & TYLER,
FROGRESS MACHINE WORKS, BALTIMORE, MD.
Also manufacturers of Set and Cap Screws.

Send for Price Lists. HAMMOND'S Window Springs Lock and support upper and lower to sashes—all sizes. Are very conven-ient, simple and durable. Sample to the Trafe free. W. S. HAMMOND, Lewisberry, York Co., Pa., Circulars give full instructions.

BUCKEYE LAWN MOWER. HE BUCKEYE JUNIOR

AWN MOWER SENIOR JUNIOR "BUCKEYE"

LAWN MOWERS. Most Reliab'e, Compact, EASY WORKING,

Durable and Efficient

Mower in the Market.

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RETT & SMALL, Boston, Mass.
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J. & J. A. Rilo.; Worcester, Mass.
SEMPLE, VALLE & BURCHARD CUTLERY CO.,
St. Louis, Mo. Rever, Col.
DEERE, MANSER & CO., Kanasa City, Mo.
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GEO. A. LOWE, Salt Lake, Utah.
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MAST FOOS & CO., St. Louis, Mo.
J. DAULTON, Paris, France.
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MAST, FOOS & CO., Springfield, Ohio, U. S. A. WILCOX & HOWE,

CARRIAGE IRON FORGINGS



The "Derby."

COMPRISING

AGON TIRE UPSETTER, FIFTH WHEELS, BOBY LOOPS, STAY ENDS, OFFSETS, SLAT IRONS, REACH PLATES, JOINT ENDS, STEPS, &c.

WE GUARANTEE OUR GOODS.

RICHARD DUDGEON. No. 24 Columbia Street, New York. Maker and Patentee of the improved Hydraulic Jacks



Roller Tube Expanders and Direct Acting Steam Hammers. Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order

Punches.



Our specialty Also, Creetings, Finials and Vanes, Stable Fixtures, Hitching Posts, Door and Window Gu Wrought-Iron Gratings, Fire Escapes and Ladders, Jails, &c. Our Fencing can be shipped to any part of United States, and can be set up by the purchaser at small expense. Our prices are reasonable. C spondence and notice of public lettings of from york solicited. Every Hardware Dealer should have ablie lettings of fromwork solicited. Every Hardware Dealer should have ou OLEVELAND WEOUGHT IEON FENCE WORKS, Omce, 21 Water street, near Union Depot, CLEVELAND, OHIO.

PURE CEYLON PLUMBAGO

In Bulk for Polishing Stoves, &c.

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The attention of stove dealers and jobbers and stove polish manufacturers is called to our Pure Ceylon Plumbago, made expressly for this trade. Parked in at and so 1b. boxes for the results of the state of th



CRUCIBLES

German Silver, Brass and Steel. Black Lead Stoppers and Nozzles.

Jewelers' Crucibles, Covers, Dips, &e. FILE HARDENERS. All our goods are made of the fixest Ceylon Plumbago,

W. T. MACFARLANE, Treasurer and Agent.

CINCINNATI ROLLING MILLS AND CHAIN WORKS

Manufacture Trace, Coll, Ox, Log and Wagon Chain, Fifth Wheels, Shackles and King Bolts, using only Iron made at our mills from strictly selected Wrought Scrap. Iron made at our mills from strictly selected Wrought Scrap.

The Cambria Iron Company have just compute parameters of the Cambria Iron Company have just compute parameters of the Isabella Furnace, No.

INDUSTRIAL ITEMS.

MAINE.

Three-fourths of the property of the Portland Smelting Works and Reduction Company have passed into the hands of a New York syndicate, who now own and control the Cape Rosier copper mine, located in Brooksville. They have already shipped about 500 tons of ore from this mine to the Smelting Works in Portland, and can probably furnish in time enough over from the company to the control of the co ably furnish, in time, enough ore from the Cape Rosier mine to run the works to their full capacity. But as these works were orig-inally designed to be run in the interests of all Maine mines, that is as a custom mill, this change of basis naturally causes dissatisfac-tion among the stockholders of other mines tion among the stockholders of other mines in the State who were expecting to have their ores smelted at the Portland Works. Since the annual meeting capital has been offered Prof. Bartlett for the construction of new smelting works, and he has now the matter under advisement.

The Shaw Relief Valve Co. has been organized at Portland with a large capital.

VERMONT.

An effort is about to be made to resume operations at the Tinmouth Iron and Marble Works. On the eastern slope of the valley there exists the brown hematite ore, which is rare in this country, covering an area of nearly or quite five square miles. In the early history of the town ore was obtained from nine different mines. The furnaces that were run in Tinmouth and Clarendon were run at the same time with the ores that were dug from these mines. Some of these beds have been mines. Some of these completed. Completed. They will have a capacity of the four furnaces at the works 400 tons daily. The merchant mill is nearing beds have been mines. were dug from those mines. Some of these beds have been worked to a depth of 70 feet without getting through the strata, while in many places where ore has never been dug, it is found near the top of the ground, and even on the surface. The supply is inexhaustible. On the western side of the valley, running the whole length of the town, and stretching farther on beyond the limits of the town to the north and south, there is every variety and grade of marble. there is every variety and grade of marble that is worked in Rutland country.—Boston

Another large casting was made some days ago at the foundry of the Lincoln Iron Works, of Rutland. It was a rubbing bed for the Wakefield Variegated Marble Company, of Burlington, and weighed 12,000 pounds.

A meeting of the stockholders of the recently burned out National Horse Nail Co., of Vergennes, was to have been held on the 24th ult., to decide whether to rebuild on the old set or remove to Troy, N. Y.

MASSACHUSETTS

In Atlanta, Ga., there are at present four large engines made by the Wheelock Com-

large engines made by the Wheelock Company, of Worcester, in active operation.

The large addition to the foundry of B. F. Sturtevant's Blower Works, at Jamaica Plain, is rapidly approaching completion. Over 3000 of the blowers and exhausting fans of this firm were sold and put into practical use during the year 1881, during which year shipments were made direct from the works at Jamaica Plain to exercise. which year shipments were made direct from the works at Jamaica Plain to every State in the Union, to all the British Provin-ces, to Great Britain, Germany, Russia, France, Italy, Australia, Mexico, Cuba and

CONNECTICUT.

W. M. Gorry & Co., founders, of Willimantic, are building a new boiler and engine house, and will soon make several improvements in the way of new tools and machinery. It is proposed to add the manufacture of agricultural implements to their already large business.

NEW YORK.

All departments of the Burden Iron Works, All departments of the Burden Iron Works, at Troy, are busy, about 2300 men finding employment. The puddling department at the steam mill is being extended. One of the buildings will be enlarged 200 x 80 feet; the other is being extended 150 x 60 feet. Twenty-two new furnaces, a large new engine and a train of rolls will be covered by the new buildings. The cost of the improvement will be approximately \$10,000. It will

ing, 35 x 50 feet on the ground, and is intended to contain the pattern accumulations of 56 years, during which time this company and its predecessor, the Peekskill Plow Works, have been in existence. The building hard a location of the pattern and the p Plow Works, have been in existence. The buildings have 1½ acres of floor room; they will be equipped with the most modern machinery for working wood, iron and steel. The freight facilities are as good as land and water connections can make them. The officers of the company are: James P. Brown, president; Jas. W. Douglas, secretary; John Pentreath, superintendent. The officers of the company are at 56 Beekman offices of the company are at 56 Beekman

The Heaton Emery Works, of Albany, have not caught up with their orders since removing from Ballston Spa, having just received large orders from the National Wood Pulp Co., of Boston, Mass., for emery pulping wheels, as well as from Western rais coads for corundum wheels for grinding car They are obliged to run night and day, owing to want of room, and are likely to have to again remove to larger quarters in the near future.

PENNSYLVANIA.

It is stated that Messrs. McClure & Co., of Pittsburgh, will, in the course of a few days, break ground for an extensive coke works on one of Dillinger's farms, near Bethany, Westmoreland County. The firm owns over 500 acres of coal land in a body in that vicinity, and intend to build 500 ovens, together with a large number of tenement houses.

In it is stated that Messrs. McClure & Co., of the city. The explosion caused the puddling department of the mill to shut down, but connections were made with another battery at once, and the mill has resumed operations.

The Spang Steel and Iron Company, Etna, are putting in a new 40-ton shear.

Messrs. Oliver B.

Conemaugh for the supply of its blast fur nace there. The coke now used at that manufactory is burning in the old-fashioned pits, and while no fault can be found with the material itself, the process of kind of fuel.

Magee & Co., of the Brownsville rolling

mill. expect to run double turn, commencing probably this week.

The Reading Coal and Iron Company are repairing one of their blast furnaces at Swedeland. It is reported that after the furnace has been put in condition for operations it will be leased to private parties. It is also said that the other furnace at that place, and belonging to the Coal and Iron Company, will be rebuilt during the coming summer, and that a forge will be erected at Swedeland.

Merchant iron is now being made on the small train in the rail mill of the Montour Iron and Steel Company, at Danville.

Under the management of the present ownership, the Fayette Coke and Furnace Company, the old Oliphant Furnace is averag-

completion, and an extension is being made to the rail mill. A new engine was recently erected at the latter mill which will enable two rails to be passed through the rolls at one time.

The Lebanon Stove Works, with a capital of \$10,000, have been chartered by the State Department at Harrisburgh. The works are

Department at Harrisburgh. The works are located at Lebanon.

A company of Philadelphia capitalists are said to have purchased a tract of land on the Brandywine, adjoining the borough of Coatesville, for the purpose of erecting a mill for the manufacture of bridge iron. The land alleged to have been purchased is near the new mill of the Worth Brothers and the foundry of C. Ridgway & Son.

It is said that the Pottstown Iron Company contemplates the erection of a large plate

contemplates the erection of a large plate mill during the coming season for the manufacture of boiler and ship plates. The new works will be built on a lot adjoining the present boiler-plate mill.

The shipment of slate from Slatington and vicinity for the week ending February 18 were as follows: Roofing slate, 1139 squares; school slate, 519 cases; blackboards, 7 cases; flagging, 1362 pieces. The slate trade is exceedingly brisk, and manufacturers have difficulty in filling the orders.

The recent difficulty with the puddlers at

Phoenixville appears to have been given more publicity than its importance would warrant. The plain facts of the case, we believe, are simply these: Some four or five years ago the company adopted various improvements in their puddling furnaces, which enabled the puddlers to make six heats per day. This was continued until last summer, day. when, owing to the excessive heat, as well as to changes which were being made at the mill, including the substitution of three-high rolls in place of two, only five heats per day were made. Late in the fall the company found it necessary, for various reasons, to fall back on their former system of six heats, especially as the men frequently had a couple of hours per day of spare time. Besides this, economy of management required that steam should be kept up, and the men were notified that six heats would be required after a certain date. In the meantime a considerable portion of the men had joined the union, and under its rules refused to make more than five heats, although. course, as they were paid by the ton, their earnings were proportionately increased by the extra heat demanded. They also induced men in the finishing department to join the union, and there were prospects of considerable trouble. Seeing the necessity of taking a determined stand, the company bought the new buildings. The cost of the improvement will be approximately \$40,000. It will be completed this summer.

The New York Plow Works announce that their new establishment will be completed in May. The location is upon a solid wharf, of 3 acres, with water front 400 feet deep between the Hudson River Railroad and the river, at Yonkers. The buildings are brick, with slate roofs. The foundry is 80 x 150 feet, without the interior supports. The forge shop is 42 x 210 feet, the machine shop 75 x 200 feet, three stories high. The pattern warehouse is a fire-proof building, 35 x 50 feet on the ground, and is men in the minshing department to join the union, and there were prospects of consideration of join the necessity of taking a determined stand, the company bought largely of muck bars and prepared to close all the furnaces, which was carried into effect last Monday week. Several attempts a transfer on behalf of the men were reade, but the president refused to be interviewed so long as they had any connection with the union. A strike was ordered for last Thursday, but by consolidating the nonunion hands four out of six finishing mills were kept at work, and a fifth started up ou Monday, the 27th. A good many of the men hare already relinquished their memmen have already relinquished their mem-bership, and with the large stocks of puddled iron recently bought the company appear confident of their ability to fill contracts without much inconvenience or delay.

PITTSBURGH AND VICINITY

About half past five o'clock on the morning of the 23d ult. the middle boiler of a bating of the 23d ult. the middle boiler of a battery of three in the puddling department of A. M. Byers & Co.'s pipe mill, on the south side, exploded, scattering steam and debris in all directions. All of the men in the mill at the time immediately rushed out. As soon as the dust and steam had cleared away they returned and found the two intact boilers moved about 10 feet from their original registion and lying access the shattoned. inal position and lying across the shattered boiler. The wooden sheds which covered the boilers were completely demolished. Five men were hurt by the flying debris. It is said that the explosion was caused by low water, and that the low water signal had sounded before the explosion occurred. The engineer thinks that the check valve and pump had become clogged, and had admitted no water into the boilers for some

Cofrode & Saylor, proprietors of the Potts-town Bridge Works, are placing the electric light in their works to facilitate operations.

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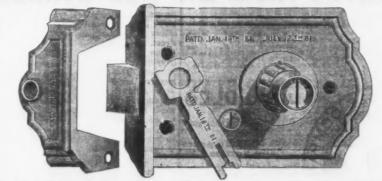


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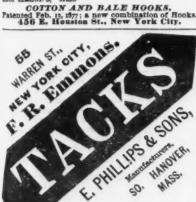
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B represents that part of the packing which, when in use, is in contact with the Pistor rod.

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PHOSPHOR-BRONZE.

I, 20 feet bosh and 75 feet high, for four weeks ending February 18, was 4850 tons of 2240 pounds each—about 173 tons every 24 hours; consumption of coke 11-10 tons per the debris and preparing for the erection of the new building, which is to be under way within three weeks.

The Youngstown Manufacturing Company

ton of iron.

The Westinghouse Machine Company have just completed three of their high-speed engines, and have twenty-five others in process of construction. Of those completed, one is for the Cleveland Electric Light Company, another for the Edgar Thomson Steel Works, and the third for the steel works of Hussey, Howa & Co. The first one is of yo here. and the third for the steel works of Hussey, Howe & Co. The first one is of 10 horse-power, and will run at 900 revolutions per minute. It is coupled directly to an electric generator, and the whole is mounted on a wagon made for the purpose, it being the design of the company for whom it was made to furnish light for shows, picnic parties, &c. The engine for the Edgar Thomson Steel Works is of 50 horse-power, will make 300 revolutions per minute, and is intended to drive an electric-light apparatus. That for Hussey, Howe & Co. is of 100 horse-power, will make 300 revolutions per minute, and is intended for a roll train, with which it will be directly connected. The engine that drives the machinery of the Westingthat drives the machinery of the Westing-house Machine Company's Works is running nouse Machine Company's Works is running regularly 500 revolutions per minute, is of 15 horse-power, and occupies a floor space of 24 x 30 inches. Another small engine may be seen in the works which is capable of making 1100 revolutions per minute, and is of about two horse-power. Engines of this class and size are designed to run head-light electric machines for locomotives. The company have orders three months ahead for their specialties, and have errected on the their specialties, and have erected on the corner of Liberty and Twenty-fifth streets, opposite their present works, a 75 x 100-foot iren-clad building, with floor and gallery,

VIRGINIA.

A connection railroad from the Richmond, Fredricksburg and Potomac to the Richmond and Alleghany has just been opened, shorten-ing the distance II miles between the James ing the distance II miles between the James River Valley, which is traversed by the Richmond and Alleghany and the North. This connection road, known as the "Henrieo Branch," runs throughout its length through a developed coal field, well known to geologists and to coal men generally, but one that has suffered because until now, there has been revealled communications. now there has been no railroad communica-

Wythe Furnace has been sold for \$21,000. WEST VIRGINIA

The Kloman Iron and Steel Company, at their shop facilities.

The American Bolt and Screw Case Com-

but the patterns were either consumed or got damaged so as to be useless. The furnaces are still standing and intact, and workmen are keeping up the fire in them so that the pots will be saved. The cutting room and packing shop, which were separated from the factory, were saved. The building destroyed was about 250 x 100 feet. The firm place the loss at from \$20,000 to \$30,000, fully covered by insurance, mostly in foreign covered by insurance, mostly in foreign companies. A large proportion of the loss is on manufactured glass. This was the oldest glass factory in operation in the West, and employed about 500 men. The firm will put

KENTUCKY

Aiken & Drummond, of Louisville, are Aiken & Drummond, of Louisville, are having a very heavy demand for their molding machine, and have been compelled to enlarge the capacity of their works. Their trade is very extensive, their machine now being in use in England and Belgium, as well as this country.

Ashland Furnace is still running regularly, making about 400 tons per week.

making about 400 tons per week.

J. P. Drouillard, R. B. Stone, Wm. A. Goodwyn, Edgar Jones and V. L. Kirkman Goodwyn, Edgar Jones and V. L. Kirkman have applied to the County Court Clerk of Davidson County for a charter of the "Drouillard Iron Company." The object of the incorporation is to greatly enlarge the facilities for turning out iron at Mr. Drouillard's furnace on the Cumberland River.

The Tennessee Coal and Railroad Company will this week take charge of its recent pure.

will this week take charge of its recent pur chase, the Southern States Coal, Iron and Land Company. The company will put Furnace No. 2, at South Pittsburgh, in blast this month. Work is now completed on it and all preliminaries are ready. The company will also erect a fourth furnace at Cowan. The car shops and foundries at South Pittsburgh will at once be considerably enlarged - PHILADELPHIA, PA. and their capacity greatly increased.

ALABAMA.

The Birmingham Iron Age of the 7th ult. says that W. H. Woodward, of LaBelle Nail and Iron Works, Wheeling, W. Va., has bought 743 acres of land in Possom Valley, eleven miles from Birmingham, and that the company named will at once erect on the property a blast furnace. If fact host, and 60. property a blast furnace 15 feet bosh and 60 feet high. The contract for the furnace and machinery has been let to Stokes & Parrish, of Philadelphia.

We learn that A. Ball & Co., Canton, have

liant Class Works, at Brilliant, on the site of the building just destroyed. The stack and furnace remained intact at the time of the fire, and the latter was full of glass. Forty workmen have been set to work clearing up wheel iron.

are at present at work on an order for 24,000 car bearings for an establishment in Colum-

There is a rumor that Peter Hayden, of Columbus, has purchased and will take immediate possession of the Capital City Car Works, and will continue the business. At the Fulton Mill, Cincinnati, Mr. Danks

putting down more of his rotary puddling furnaces

furnaces.

The Newburgh Furnace Co., Cleveland, which recently purchased the old Emma Furnace in the Eighteenth ward have elected the following directors: Messrs. J. H. Dalliba, W. G. Pollock and Dudley Baldwin, Cleveland; George D. Wick, Chicago; C. M. Schmick, Leetonia.

Heald & Conroy, proprietors of the Link and Pin Works, Warren, have dissolved partnership, Mr. Heald taking charge of the works. Mr. Conroy will erect similar works at Youngstown.

The Niles Tool Works, Hamilton, shipped last month a set of pulley bearing and turn-

The Niles Tool Works, Hamilton, shipped last month a set of pulley bearing and turning machinery to St. Petersburg, Russia.

J. H. Watt & Bros, of Barnesville, manufacturers of Watt's patent self-oiling car wheel, have dissolved partnership, and the firm will hereafter be known as the Watt Mining Car Wheel Company.

Mr. D. M. Steward, of Cincinnati, is filling some large orders from Boston, New York, Chicago and nearer home for his new insulators for gas burners lighted by electricity, and expects a heavy trade for these and insulators for electric wires attached to and insulators for electric wires attached to

The Queen City Malleable Iron Company's which will be supplied with appliances for doing heavy engine work. They expect to have this addition to their plant in operation in about three months.

WIRGINIA.

The Queen City Maneaule from Company so Works, at Cincinnati, are running to their full capacity under the new management. They have recently added to their list of hardware specialties some new articles, among which are their malleable wheels and carriage shaft attachments. In these goods are combined great strength and tenacity, with lightness and beautiful finish. They will soon present other new specialties to the

The Cincinnati Sorew and Tap Company have recently removed to the large building at the corner of Pearl and Plum streets, where they have very largely increased the facility of their works. Mr. Geo. A Mueller facility of their works. Mr. Geo. A Mueller and Mr. Fred Holz are the proprietors. They have been in operation for several years at Cincinnati, and for some time the old works have been too limited for the increasing demand for their goods. They anticipate a very heavy trade this year, and have added some new and improved machinery, doubling their short facilities.

mill.

Fire was discovered on the roof of J. H. Hobbs, Brockunier & Co.'s glass factory, in South Wheeling, about five o'clock on the evening of the 24th ult. It had caught from the pipe psssing from the "glory hole," and owing to the scarcity of water soon spread over the entire factory. The ventilating shaft gave a tremendous draft, and the fierce heat of the flames melted the braces supporting the iron roof. The factory with the mold and pattern shops were totally consumed. The molds and presses were saved; but the patterns were either consumed or got damaged so as to be useless. The furnaces are still standing and intert and the force and for carriage manufacturers and machinists.

The Chicago Die and Machine Company The Chicago Die and Machine Company are working up quite a trade for their carwheel grinding machines, having recently shipped three—one to the Pullman Palace Car Company, Pullman, Ill.; one to the Lehigh Valley Railroad, and the other to the Baltimore and Ohio Railroad.

Harrington & Ogleshy Company of Chicago

Harrington & Oglesby Company, of Chicago, manufacturers of perforated sheet metals, will shortly erect for their own use employed about 500 men. The firm will put up temporary sheds, and expect to be making glass again this week.

a factory 100 x 150 feet and three stories high. This will more than double the present capacity of their establishment. They are operating their works day and night, and are two months behind in their orders.

are two months behind in their orders.

The main building of Fowler's spike works, at Englewood, is finished, and it is expected the works will be in running order, on an initial capacity of twenty tons a day, by the 15th of March. Most of the machinery is now in place. The Congdon Brake Shoe Company, who purchased of Mr. Fowler 300 x 125 feet adjoining the spike works on the south, have finished the erection of a large machine shop and foundry, and expect to be in operation in twenty days with a large force of men.

The Columbian Brass Works is the name of a new concern recently established in Chi-

cago for the manufacture of brass castings of all descriptions. The Chicago Steel Horse Shoe Company

and Drop Forging Works, of Pullman, have added new and extensive machinery to their works for making all descriptions of drop works for making all descriptions of drop forgings. Their specialties will be agricultural, carriage hardware and miscellaneous forgings; also railroad track and all kinds of wrenches. Mr. H. T. Russell, an experienced drop forger, is the superintendent of the works and was formerly with the Pratt and Whitney Company, of Hartford. This is the first establishment of its kind in this locality and will supply a long felt went.

J. S. Lizars & Co., Chicago, have received the contract to place their patent feed water heater and purifier upon all the boilers at the water works and the Cook County Court House, in addition to which they have shipped several more to Springfield, Ohio, and Rochester, Minn., during the past week.

One of the boilers in the blooming mill of One of the boilers in the blooming mill of the Vulcan Steel Works, St. Louis, exploded with great force on the 23d ult., killing four men and injuring a number of others. The mill was also considerably damaged.

MICHIGAN.

we learn that A. Ball & Co., Canton, nave entered suit against Bucher, Gibbs & Co. for \$15,000 damages for libel. Both firms are plow manufacturers in that city, and the suit grows out of a dispute concerning the names of their respective plows.

It has been determined to rebuild the Brilliant of the Rilliant of the

The Iron Age

Metallurgical Review.

New York, Thursday, March 2, 1882.

Publisher and Proprietor JAMES C. BAYLES Editor JOHN S. KING . . . Business Manager

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Fourteenth Page .- Steel Blooms. The Insti tute of Mining Engineers. The Dominion Budget Our Foreign Trade in Metals, Iron and Coal in 1831. Developing Mexico. Sandberg's Steel Rail Bloom Specifications

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Thirty-ninth Page .- The Iron Age Direc Fortieth Page .- New York Wholesale Price

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burgh Hardware and Metal Prices Forty-eighth Page .- Boston Hardware an

The cable brings the intelligence of the failure of the negotiations for the treaty of commerce between England and France. I seems that M. Tirard, the French Minister o Commerce, has been opposing the concession which the English Commissioners were in structed to demand from the French Com missioners before concluding the terms of th treaty. This opposition of M. Tirard caused the negotiations to be broken off, and all This is another blow expired in February.

shows how the shrewdest men may be mis- another rose and paid tribute to his memory, taken. When Cobden secured the repeal of there were many evidences of deep feeling, the corn laws in 1845, and later brought about and few listened without tears. We cannot a certain kind of free trade, and when he had persuaded the French Emperor to negotiate session, owing to the pressure of other matthe commercial treaty just expired, he ter upon our columns, but hope to do so in thought the world was on the way to free our next issue. trade, and died happy in that belief. Now the drift is the other way. A respectable nations of Europe tend to protection, and the treaty Cobden so shrewdly negotiated with France is ended. Some men build better den that he thought he builded better than

Steel Blooms.

The text of Secretary Folger's ruling in the matter of steel blooms is given in the letter of our Washington correspondent. It will be read with rather more of interest than of profit, and the reader who has any previous knowledge of the subject will reach the conclusion that Judge Folger made a mistake when he undertook to sustain his ruling by an argument. It would have been wiser if he had avoided nice distinctions and definitions of commercial terms and made his decision arbitrary, or because he believed that 45 per cent. was as high a rate of duty as blooms ought to pay. The closer we follow his reasoning the more clearly we perceive the depth of his misunderstanding and the comprehensiveness of his misapprehension. His whole argument to show that a bloom is not an ingot and cannot be so considered in tariff interpretation is upset by the simple fact, well known and established by incontrovertible evidence, that when the tariff was framed what we now call a bloom was called a cogged ingot. The name has changed, but the article to which the name 'bloom" is applied remains unchanged. Judge Folger cannot believe that the framers of the tariff, when they fixed the duty on ingots fresh from the mold at 21/4 cents per pound intended that cogged ingots—a product one step further advanced toward finished rails-should by any subsequent misconstruction of the law come in at 45 per cent. ad valorem-much less at 30 per cent. And yet he expresses regret that respect for the decisions of his predecessors in office restrains him from declaring that 30 per cent. is the proper duty for blooms. That his argument has even the appearance of reasonableness rests upon an accident—the substitution of "steel bloom" for "cogged Bessemer ingot" in commercial nomenclature. If this principle is to govern Treasury decisions, it would be an easy thing to make the tariff inoperative, as it would not be a difficult matter to change the name of any product of iron or steel if the leading houses in the trade should set about it systematically. A very few years' use would give the new name the sanction of general employment.

The question we are discussing is not now and has not been at any time, whether steel blooms-the "cogged ingots" of 1861ought to be taxed 21/4 cents, or 45 per cent. or 30 per cent. This is a matter for Congress to determine, and without disrespect to the Secretary of the Treasury, we may say it is one of his business whether the rate fixed by Congress is higher or lower than a given article ought to bear. Judge Folger evidently thinks that 45 per cent. is quite enough duty for steel blooms, and has set his wits to work to find reasons for so ordering In this he has failed signally, and, as we have already said, an arbitrary decision would have done him more credit than his argument, and amounted to exactly the same thing in the end.

The Institute of Mining Engineers.

The annual meeting of the Institute of Mining Engineers, held last week in Washington, was one which those so fortunate as to be able to attend it will remember with satsfaction. The meeting was not conspicuous for scientific interest, but the papers were varied, and all dealt with topics of current importance. The discussion was ree and animated, and while not developing any new or startling facts in science. was instructive and interesting. The disussion on tests of iron and steel as strucural material, which is very fully reported elsewhere, is of immediate and practical nterest in view of pending legislation, and expresses very freely the views of engineers and manufacturers of iron and steel as to the necessity of continuing the work begun by the United States Commission, which expired, by the failure of Congress to make an appropriation to meet its expenses, about the time the great testing machine now at the Watertown Arsenal was finished The aportance of creating a new commission with larger powers and better defined bjects, has been brought to the notice of ongress in a bill just introduced, which will receive the hearty support of the entire profession, and we think have favorable

ousideration by both Houses of Congress. To devote an entire session to memorial ddresses in memory of the late A. L. Holley was a graceful tribute to one whose connec tion with the Institute added so much to its influence, usefulness and popularity. It was hope of a treaty being consummated in the not an occasion for the display of brilliant near future is ended. The present treaty rhetoric, nor for attempts at oratorical effects, but a gathering of those who knew to the hopes of the followers of Cobden, and and loved Holley, and as one friend after

In view of the interest of the city and the many places which members were naturally portion of Englishmen are agitating for a inclined to visit, such as the public buildings, number repeal of the corn laws, and demand the Corcoran Gallery, the Smithsonian Instiprotection under the guise of reciprocity; the tution, the Navy Yard, &c., no excursions were arranged, and each employed his time between the sessions as pleased him best An informal reception was given by Presi than they know, but it must be said of Cob- dent Arthur at the White House, which most of the ladies and members attended. The banquet at Wormley's on Thursday evening was one of the finest ever spread for the Institute, and the several distinguished guests who responded to toasts made this portion of the entertainment unusually brilliant. Altogether it was a pleasant meeting, though many felt it to be a sad one.

It is expected that the next meeting will be held in the far West, partly because many Western members desire such an opportunity visit the Rocky Mountain region, and partly as an accommodation to members in the mining districts of Colorado, Arizona, Nevada, California and other far Western States and Territories, who have hitherto been required to come long distances to attend the meetings.

The Institute is rapidly growing in numbers and influence, and its active membership somewhat exceeds 1000. The election of Mr. R. P. Rothwell, E. M., to the pres idency for the ensuing year, was a graceful recognition of his efficient services in organizing the Institute in the face of difficulties which to one less interested in the good of the profession would probably have seemed insurmountable. Probably the Institute has much outgrown Mr. Rothwell's brightest expectations, but this is all the more creditable to its founders, as so great an Institute could have been built up only on a foundation wisely laid.

The Dominion Budget.

The annual budget of the Dominion Miniser of Finance was presented to Parliament last Friday, 24th ult. The policy of the present ministry is vigorously defended, the prosperity which the country now enjoys being referred to as evidence of its success. interpreted by the opposition press, the Minister does not consider Providence as entitled to any thanks on this score. At no former period has public credit stood so high, there being no deficit in the treasury, as some had predicted, but, instead of this, an estimated surplus of \$4,132,700. It is contended, therefore, that the Government to-day stands in an impregnable position with respect to the results of the tariff, both for protection and alone we shipped last year \$12,893,000, revenue purposes. A number of changes against \$10,124,000 in 1880. Quicksilver Brass in sheets and britannia metals in pigs and bars are placed in the free list, also quicksilver and spelter in free list, also quicksilver and spelter in amounts abroad. The increase in locomotives blocks and pigs. The removal of the duty will be noticed. Taken as a whole, the result on tin means a loss to the treasury of \$100,-000, but it is found necessary to encourage factures of lead. Iron it is proposed to of little importance we have omitted reduce to \$1 per ton. Says Sir Leonard Tilly: "The question of the iron duties has been pressed upon the Government, and recently. The iron industry is an important one, no doubt, but at this moment we are not prepared to submit any further proposition regarding it, and I can only say in addition, with reference to it, that "the subject is for the present under con-"sideration." Clock springs, now 35 per cent., are to be reduced to 10 per cent.; wrought-iron tubing, 134-inch and upward, is to be reduced from 25 per cent. to 15 per cent. ad valorem. Machinery imported in ships' hulls will in the future have to pay a duty of 25 per cent., because we found that under the old arrangement there was really an inducement "to people to go to the United States and build a vessel and put in her machinery there, for they could be both brought in at 10 per cent., while machinery brought in separately was subject to a duty of 25 per cent." The 10 per cent. duty on tea purhased in the United States is to be maintained. These changes involve a reduction under the head of customs amounting to \$1,000,000. The Government have decided, in addition, to ask Parliament for \$150,000, to be distributed among fishermen in the shape of a bounty, with the design of encouraging the construction of vessels which

are now obtained in the United States. Combating the assertion made by the present government that its policy was in the interest of the United States rather than Great Britain, the Minister of Finance cites the statistics of imports already given in these columns, and remarks: "Now, sir, that shows most clearly, in accordance with the evidence submitted last session of Parliament, that there has been a very large increase in the imports from Great Britian over those from the United States. That can be well understood, and it was

would strike against the industries and interests of the United States rather than against those of Great Britain. Such has 'been the result, &c." In like manner the trade and navigation returns are quoted to prove that a falling off of nearly 32 per cent. last season in the trade of the St. Lawrence, was solely due to the exceptional circum stance of railway competition controlled by "a ring" in Chicago.

Our Foreign Trade in Metals, Iron and Coal in 1881.

The extracts below, from tables furnished by the Bureau of Statistics, show that domestic export in the articles mentioned increased notably during the last calendar year.

Articles.	guantities.	vanities.	1881.—Thousan of Dollars.	1880Thousan of Dollars.
Bells and bronze			Sig	\$22
Brass goods			321	226
Clocks		******	1,114	1,369
Coal, Anthra-	541,866	410,880	2,500	1,778
Coal, Bitumin-	341,000	410,000	4,390	1,770
ous, tons	228,205	199,239	814	736
Cop'r ore, cwts.	13.790	18,647	54	67
Ingot cop'r, lbs.	7.034.775		1,139	63
Copper mfrs Gas fixtur's and			60	60
lamps			337	313
Pig iron lhs	13.201.281	4.101.938	184	70
Bar iron, lbs	896,884	766,008	32	31
Bar iron, lbs Beiler plts., lbs. Iron rails, lbs	138,383	286,014	6	12
Iron rails, lbs	1,194,720	2,011,047	34	41
Sheets & hoops,		274,681	9	16
Castings	229,440		288	313
Car wheels	13,643	8,673	130	97
Car wheels Stoves			142	121
Locomotives	IOA	73	914	652
Steam engines.	94	98	88	130
Machinery			4,818	85
Machinery Nails and spikes			4,010	3,685
lbs	9, 183, 373	7,860,322	312	318
Other iron gds Steel ingots and			5,766	4,654
Steel ingots and				
wire, lbs	437,593	290,745	46	36
Edge tools			1,115	968
Edge tools Files and saws .			43	32
Fire-arms			810,1	1,370
Steel rails, lbs	173,500	134,667	7	7
Other steel gds			562	351
Cannon			169	45
Cartridges			360	599
Shot and Shell,	231,450	4,446	150	399
Argentiferous	2311430	31340	.30	- 1
ore			30	68
Paints			379	248
Plated ware			354	287
Type and pr'sses Quicksilver, lbs	0.680.770	a San saf	195	266
Scales			235	293
Sewing machas.			3,180	1,896
Fire engines			19	7
Tin ware			187	187
Zinc ore cwis	TO 070		8g	92
Zinc ore, cwts Sheet zinc, ibs	19,020	5.510 8.737.276	117	155
		-1/3/1//0		
Total			37,796	22,888

In 1880 we shipped only \$22,888,000 worth of metal exports, whereas last year \$27,726,000 left the country. Of iron goods shows but a small decline. Sewing machines, since they are cheaper, sell in increasing of the year is satisfactory and encouraging.

From the same official source we take the the canning industry. The duty on glass is following items of import for the last calendar

Articles	1611.—Quantities.	169c.—Quantities,	1881.—Thousands of dollars.	1550.—Thousands of dollars.
Tin, cwts Brass goods Coal, tons Copper ore,cwts ingot cop'r, lbs.	193,364 834,174 58,467 789,670	266,923 -79,016 -01,771 -4,561,364	\$4,389 559 2,205 135 68	86,120 410 1,720 212 708
Copper mfrs Pig iron, lbs Castings, lbs Bar iron, lbs	1,040,323,955 1 261,296 98,630,907 579,510		304 8,923 38 2,074	417 14,998 7 4,722
Boiler iron, lbs. Hoops, &c., lbs. Iron rails, lbs Sheet iron, lbs Old & ser'p iron,	1,653,674 274,025,172 16,241,898	50,643,568 261,017,854 22,823,867	3.465 61.4	1,033 4,094 944
Hardware	134,917	619.887	3,705 84	14-705
lbs Machinery Firearms Steel in ingots,	3,039,189	2,785,803	134 1,739 1,334	141 1,60: 1,03
&c	498,616,249	316,459,358	9,950 7,649 1,954 169 24	5, 483 5,008 1,895 100 6
other from and steel goods Pig lead, lbs Lead mfrs	7,869,126	6.438,032	5.772 274 3	6,772 250 18
Metal goods White lead, lbs. Red lead and	1,272.603	1 536,265	7.568	1,452 88
litharge Tin plates, cwts Tinware Spelter, lbs	3,660,106 5,511,203	100,783 3,160,976 6,160,653	13 14,887 73 210	16,178 69
Sheet zinc, lbs Total	2,6/6,790	4,288,028	871,575	321 802,144

While the general import decreased from \$92,144,000 in 1880 to \$71,575,000 in 1881, or 22 per cent., that of iron and steel alone fell from \$63,667,000 to \$46,667,000, or 27 per cent. So far as the weight given indicates, iron declined from 7,881,336 tons to 6,518,990 tons, while steel rails rose from 141,280 to 222,596 tons. While tin plates some increase, all metals except pig lead show a decrease.

The abstract of the charge of Judge Baxter, of Ohio, in the case of Hays vs. the Pennsylvania Railroad Company, elsewhere stated here in 1879 that that would be the given, will be read with interest. Though case, because the manufactures which it not laying down anything which will be was intended to establish, encourage and maintain in Canada by means of the important as defining more clearly and intended to establish the state of sulphur, phosphorus, silicon and manganese, but if there be no such stipulation, the inspector will have to satisfy himtariff were those the products of which we specifically the obligations of a railroad comhad largely imported from the United pany to deal fairly and equably with ship-States. It was not with any ill-feeling toward our neighbors that this teriff was established, but we were gratified when we think that more harm than good is to be ex-

"found that the policy we had introduced pected from legislation designed to make the railroads subservient to the public interest.
The danger is that they will intrench themselves behind legislative enactments, and so remain beyond the reach of common law, which now seems adequate to protect the interests of the public when intelligently ap-

Developing Mexico.

To many minds Mexico, as a field for either mechanical or mercantile enterprise, presents a strange fascination. American adventurers of all sorts have gone there within a few months, most of them with little or no capital, and not a few are already bemoaning their mistake. The collapse of the Palmer-Sullivan railroad combination. as it was called, brought to grief a number of once hopeful engineers, surveyors, &c., who are now seeking other occupations. And yet the accounts brought home by those who have explored the ground have in them much of the couleur de rose. The editor of a St. Louis industrial newspaper, who has just returned from Mexico after a search for information, expresses surprise at the thrift and advancement in industries apparent at the Mexican capital. A better line of machinery and heavy hardware is rarely found than is seen in two or three warehouses there. No less than six houses are handling American sewing machines on a considerable scale, and among travelers met on the roads it is common to find capitalists, or their representatives, who are engaged in establishing themselves in various lines of industrial pursuits. A concern called the Durango Tin Mining Co. are bringing out machinery and everything necessary to set up reduction works on the American plan. Two oil companies were arranging for an enormous business. In regard to mining operations, we are told that, though there may not be "millions in it," fortunes await those who go in with modern machinery and improved methods. " If you prefer iron to silver and gold, there "is plenty of money to be made from its " manufacture. The iron ores are exceed-"ingly rich, and can readily be turned to " profit. There are next to no furnaces and " forges in the entire country, and the man " who has the capital to carry on this busi-"who has the capital to carry on this business, is bound to find a market at remuner"ative prices for all the iron that he can
"manufacture. All kinds of machinery are
"from 100 to 150 per cent. higher than in
"this country. Raw castings are worth
"eight cents per pound; bar iron, twelve
"cents, and nails, fifteen cents. With
"plenty of everything needed in the manufacture handy, you can judge for yourself
"whether there is any money in the iron
"business or not."

"business or not."

It is good advice, however, that unless a man has money to take in machinery and develop the resources of the country, he had better stay at home. Skilled labor is not in demand until skilled methods of development are in vogue.

Saudberg's Steel Rail Bloom Specifications.

London, 15th February, 1882.
Offices: 19 Gt. George St., Westminster, S. W. Offices: 19 Gt. George St., Westminster, S. W. 1
To the Editor of The Iron Age.—Dear Str:
In your issue of the 2d February (page 17th)
there is an article by "Mr. Morrell on the
Steel Bloom Discussion," my specification
and inspection of blooms being used as an
argument against the Treasury Department
for imposing inequitable duties on rail
blooms. With this view and because it
might prove interesting to the importers of
blooms generally to know the specification blooms generally to know the specification in extenso, I inclose a copy.

n extenso, I inclose a copy.

I have worked according to it for very large quantities, and found it giving satisfaction both to producers and consumers.

Yours truly,

C. P. SANDBERG.

SANDBERG'S SPECIFICATION FOR STEEL BLOOMS FOR RAILS AS WORKED IN 1881

Time of Delivery..... Dimensions..... Weight....

Marking.-Each bloom to be marked with the maker's name either rolled on the sides or stamped in plain letters at the end, and so to have inspector's stamp after approval.

Mode of Manufacture,—The steel must be cast into ingots large enough to work down into at least two blooms of dimensions required. The ingots must be heated, hammered or rolled as specified to clean blooms, ends cut square and perfectly solid, and the surnce to be free from cracks or flaws.

Inspection Mechanically.—Previous to the

charge being used, a small sample ingot to be tested from every blow by forging and bending cold to right angles.

The blooms will be passed in lots not exceeding 250 tons each. The inspector appointed by the buyer will select from each lot a certain number of blooms not exceeding.

per cent., to be rolled into rails of any sections at hand at the moment. Such rails must be free from cracks, flaws and other imperfections, and the crop ends sustain Sandberg's normal drop test without fracProof Valuation

Inspection Chemically .-. The steel must be analyzed for carbon by makers to sho it contains the stipulated amounts of from 0.20 to 0.40 per cent., and the inspector has the right to see that this is carried out and also to take borings to check these analyses. Besides the carbon testing the inspector may take borings from any blooms or rails he chooses for general analysis, which must agree with buyer's stipulations for the conself that the steel is of proper chemical com-position; and suitable for making steel rails

The inspector or his assistants are to

have the right of entrance into the works at all times, to inspect the manufacture and quality of material, and to superintend the inspection as well as to inspect the blooms.

Inspection Certificates.—The inspector shall

issue certificates of blooms both mechanically and chemically when requested for any portion of the order passed, to state that the blooms are practically within the limits of the specification, and in his opinion suitable for making steel rails of first quality.

Note.—Exporters of blooms and rails may

be at liberty to adopt the Sandberg's specifica-tion, but unless he himself is intrusted with the inspection, both mechanically and chemically, he cannot be responsible for the results. An inspection book showing that this specification has been executed, both mechanically and chemically, shall be handed to the buyer, who shall then pay the inspection fee, which, on no account, is to be paid by the maker. by the maker.

19 GREAT GEORGE STREET, WESTHINSTER, LONDON November 1881.

AMERICAN INSTITUTE OF MINING ENGINEERS.

WASHINGTON MEETING.

The opening session of the Annual Meeting for 1882, of the American Institute of Mining Engineers, was held on February 21, in the the New National Museum connected with lecture room of the Smithsonian Institusequent sessions were: B. Silliman, Orleans Longacre, E. M. Ferguson, A. Hague, J. F. Holloway, A. Heckscher, R. L. Martin, J. C. F. Randolph, E. V. McCandless, H. E. Wrigley, G. W. Bramwell, L. E. Warner, G. A. A. Martin, G. G. A. A. Martin, G. G. Fraewen, G. O. Fraewen, G. C. A. Ashburner, H. C. Freeman, C. O. Parsons, W. S. Franklin, Clark Fisher, G. T. Wicks, A. P. Boller, Alexander Strausz, John Bogart, O. Chanute, C. H. Roney, G. W. Bramwell, S. H. Chauvenet, E. M. Par-W. Bramwell, S. H. Chauvenet, E. M. Parrott, Joseph Hartshorn, H. Veeder, William Metcalf, T. M. Drown, M. C. Bullock, A. Hamilton, J. P. Witherow, G. C. Marshall, William Lilly, J. H. Harden, C. A. Statefeldt, Charles Macdonald, O. W. Barnes, H. Burden, N. S. Steith, W. B. Devereux, W. P. Shinn, W. J. Taylor, William F. Biddle, I. G. Johnson, J. M. Knap, F. J. Slade, George H. Frost, J. M. K. Wickersham, F. P. Miles, Paul A. Oliver, G. W. Maynard, A. Winslow, L. A. Riley, T. Egleston, W. H. Scranton, P. Roberts, Jr., D. Torrey, E. F. Loiseau, E. J. Hurlbut, E. H. Sears, R. W. Raymond, A. D. Churchill, W. W. Van Voorhis, Knight Neftel, C. H. Morgan, J. M. Hartman, W. S. Ayres, R. H. Sanders, M. Hartman, W. S. Ayres, R. H. Sanders, B. F. Fackenthal, Jr., P. G. Salom, M. Coryell, C. O. Thompson, James W. Abbott. W. U. Barnes, H. M. Howe, E. C. Appleton, T. C. Clarke, H. S. Drinker, T. Guilford Smith, W. Hamilton Merritt, S. W. Baldwin, G. H. Hewitt, S. B. Whiting, E. D. Loavitt, Jr., A. Heckscher, J. C. Smock, W. Leavitt, Jr., A. Heckscher, J. C. Smock, W. S. DeCamp, G. S. Morrison, William F. Ward, C. Constable, S. W. Rand, S. F. Fisher, T. Sterry Hunt, J. F. Lewis, Albert Spies, M. D. Valentine, David Williams, S. T. Wellman, J. C. Bayles, James Morgan, Jr., B. W. Frazier, J. D. Weeks, H. E. Collins, C. Kirchoff, Jr., Jed Hotchkiss, W. G. Leavitt, J. W. Lewis, J. C. Bayles and others.

The president of the Institute presided, and the evening was given up to introductory exercises. Gen. W. T. Sherman, one of the Regents of the Smithsonian, welcomed the

Institute on their behalf. ADDRESS OF GEN. W. T. SHERMAN.

GINGLEMEN: I have been invited to meet you this evening to extend to you the cordial greeting of the Regents of the Smithsonian Institution, and to assure you that they are most happy to have it in their power to place at your disposal this beautiful hall dedicated to science and art. This National Museum is the property of the United States, of which the Regents of the Smithsonian Institution are simply the custodians, and the board has delegated to its secretary, Proboard has delegated to its secretary, Pro-fessor Baird, the right to extend its use to the National Academy of Sciences, and like kindred societies, among which we are glad to class the Institute of Mining Engineers. It is eminently fit that you should meet here It is eminently fit that you should meet here at this, the nation's capital, under a roof partly your own, devoted to natural science, and in the shadow of the Smithsonian Institution, founded for the exclusive purpose of collecting and diffusing knowledge among men. Of all the workers employed on earth no single class seems to me more worthy the respect of their fellows than those who seek beneath the surface for the useful minerals and metals which contribute so largely to the surface for the useful minerals and metals which contribute so largely to the metals which contribute so largely to the wealth and comfort of mankind. In no wealth and comfort of mankind. In no branch of human industry does intelligence will prepared band experience. come so immediately in contact with labor. To the mining engineer chemistry, mineral-ogy and geology are as reading, writing and arithmetic to the merchant, and algebra, trigonometry and geography to the navigator. There is no business or profession where ignorance is so fatal or mistakes more disastrous. No single interest has done more to build up our present empire, and, in my opinion, on no other single interest, except agriculture, does the future grandeur and stability of our country more depend, than on its mines and mineral wealth. I do not mean to tire you with figures or statistics. with which you are doubtless more familiar than I am, but I cannot refrain from giving a very few out of the great mass which have been selected by those engaged in compiling the late census table of 1880. ANTHRACITE COAL.

and

Product for year ending June 1, 1880,	
tons Value of product Value of product Total capital, real and personal Number of men employed above ground Number of men employed below ground Number of boys under 16, above ground Number of boys under 16, below ground	50,161,196
Total employees	68,239
BITUMINOUS COAL.	
East of tooth Meridian.	
Product for year ending June 1, 1885, tons. Value of product delivered	49 044,498 89.039.131 14,348
	-

Total omployees.....

	Product for the year ending June 1, 1880, tons— Value of product at mines Total capital, real and personal Number of men employed above groun Number of men employed below groun Number of boys employed above groun Number of boys employed under groun Number of boys employed under groun	. 1,477,736 \$3,272,470 . 8,479,573 d 621 d 2,812 d
	Total employees	1,44T
	IRON ORE.	
The second secon	Product for year ending June 1, 1880, tons. Value of product Total capital, real and personal. Men employed above ground. Men employed below ground. Boys, under 16, above ground. Boys, under 16, under ground.	7,471,706 \$23,167,007 01,782,287 16,345 13,375 7,339 249
	Total employees	31,668
	COPPER.	311000
	Product for year ending June 1, 1880, lbs Value of product Total capital, real and personal Men above ground. Men under ground. Boys above ground. Boys below ground.	50,665,140 \$8,842,961 31,675,096 2,755 3,069 902 902

Of copper, the Lake Superior region

Total employees ..

West of rooth Meridian

nishes 90 per cent. of all, and yields pure copper enough to cover 25 3/4 acres with a sheet I inch thick. The amount of gold produced in the census year 1880 was \$33,379,-663. The amount of silver is reported as \$41,110,957, aggregating precious metals used as coin the world over \$74,490,620. These figures are official—they do not exaggerate, but fall short of the whole truth They exhibit the net product of some of our mines; and when we follow the metals in their development for the uses of civilized men—when we remember that it takes two tons of iron ore, and from 2 to 2½ tons of coal to make a ton of pig iron worth from \$20 to \$26; that by further manipulation this same ton becomes worth \$40 to \$60 for railroads; from \$60 to \$100 for mechanical uses; from \$2000 to \$4000 a ton in the shape of needles, and for watch springs it becomes \$1,000,000, it opens up the question of manufactures not pertinent to this occasion; but you, the mining engineers, give the initiative to this most important subject—you go into the earth and reach the fountain source of this stream of vital industry. I myself was in the new Almaden quicksilver mines of California as early as 1847, and saw the Indian miners, with pick and crowbar, collect the beautiful mineral, load it into raw hide sacks and pack it on their backs, climbing like rats up notched poles to the mouth of the mine, whence it was hauled in ox-wagons to the furnaces in the valley below. I saw to the furnaces in the valley below. I saw the first specimen of gold found in Sutter's famous mill-race, and witnessed all the changes, from the common tin pan to the cradle, the long-tom, the hydraulics, the arastra, and the 100-stamp mill, roaring like the anvils of the gods, with flumes thirty miles long to bring the water needed to separate the metal from its matrix. I have been down in the copper mines of Lake Superior, with their oscillating engines, and Superior, with their oscillating engines, and inclined railways leading to the deepest pits, where the highest science and ingenuity of man have reduced the necessary labor to the minimum, and produce that beautiful and most useful metal at little over 16 cents per pound. I have also seen Mr. Hill's reverberatory furnace, at Black Hawk, Col., with its roaring flames under the hot blast, melting down rock to a fluid, which is skimmed suedown rock to a fluid, which is skimmed successively of the useless slag till the precious metals remain below, and are drawn off into the comparatively small "mat." This, again, is reduced to a fine black powder, as unlike silver as a pot of lamp-black; yet chemical affinities draw out the pure crystals of beautiful silver, and a further process tals of beautiful silver, and a further process eliminates the gold, and leaves still a valuable residue of lead, copper and iron. I have been down in the deep mines of Nevada, where the terrestrial heat suggests a hotter place; where steam elevators bring up the mineral and steam pumps deliver an abundance of hot water to supply the rotaries; and I have seen coal and iron mines of every conceivable kind, and in all quarabundance of hot water to supply the rotaries; and I have seen coal and iron mines of every conceivable kind, and in all quarters of our country, so that I have had some experience, and can bear willing testimony to the industry, the skill and ingenuity of our mining engineers everywhere. The sinking of shafts, the running of galleries, the disposal of waste material, the granding against water and rock slides the fully prepared by previous study, reflection and experience. I am confident that you will prove equal to every change and emergency which may arise, and your meeting here is most auspicious, if by comparing shaped, allowing free circulation of the air. your personal experience you can make the occupation of the miner more safe and more profitable than it has heretofore been. Loiseau now proposes to introduce small ma-There is in the business world as much fric-tion as in mechanics. A constant, vital, mental force is ever necessary to overcome old habits and methods to which the miner clings with as much tenacity as any other class; but we know that change is written in broad characters across the face of nature. True, to-day is as yesterday, and the coming spring will bring forth its flowers as the past, but there was no steam engine at the beginspring will bring forth its flowers as the beginbut there was no steam engine at the beginning of this century; the photograph and
telegraph were unknown fifty years ago;
within twenty years the telephone and electric light have been added to the stock of
improvements, and these things are now as
essential to human life as food and clothing.

The successful approximate dust produced by
the slacking of brown coal of the West
(lignite) when these coals have been exposed
to the action of the air for some time, will
and must be of great importance to that part
of our country. Mr. Loiseau further said
that it was a matter of no little difficulty to We know not what new inventions are yet to be, but we do know that the man who holds back too long, and clings to the familiar to be, but we do know that the man who holds back too long, and clings to the familiar knowledge of the past, refusing new knowledge, will be left behind in the great race of life. He will be as the passenger of the old stage coach left in a mud hole, while his neighbor will whirl along at the rate of thirty miles an hour in the modern steam-car. So the mining engineer must been man with the mining engineer must keep pace with the mechanical arts; must utilize every new and approved contrivance to diminish human

and asses, as were there in the days of than that of wood. No true carboniferous on file in our own "transactions" and in Moses; and in Mexico you will find women coal has yet been found in California, Orethose of the American Society of Civil En-Moses; and in Mexico you will find women on their knees grinding corn with the matate, and the old arastra going round and round with its mule, while in the most inaccessible corners of California, Nevada and Arisons the corners of California, Nevada and the c cessible corners of California, Nevada and Arizona the cough of the steam engine is heard and the thunder of the stamp-mill shakes the earth. It is not for us to say which system produces the largest measure of human happiness. It suffices for us to know that we prefer the latter, and mean to reduce mining to an absolute science, yielding the largest profits, and increasing the comfort and safety of the miner to equal those of the former. The Smithsonian Institute accepts the past, and only deals with stitute accepts the past, and only deals with "new" knowledge—the "increment," so that when you are down in the fissures of the earth and discover any new metal, mineral or principle of natural law, we expect you to add your mite to that colossal column of human knowledge which towers high above the Pyramids of Egypt, and in return we will be most hamy to reciprovate negotiations were sold to be negotiations were sold to be not increment. stitute accepts the past, and only deals with "new" knowledge—the "increment," so return we will be most happy to reciprocate by supplying that which we gather from the uttermost parts of the earth. The republic of science has no earthly limits. It embraces the heavens above, the world below, and the waters under the earth. So, my friends, we our Eastern cities—Philadelphia, for example. At the conclusion of this paper, Mr. wisdom will govern your counsels and that J. D. Weeks, of Pittsburgh, stated that he nonor and success will crown your labors.

Major Powell, director of the United States

Geological Survey, chairman of the Local Committee of Arangements, then delivered the address of welcome of the local members. It was in the same line as that of General

After the meeting at the institution, Major and Mrs. Powell held a reception for the resident and visiting members of the Institute and the ladies accompanying them, at their residence, M street, northwest. The spacious parlors were thrown open, and for three hours there was an almost continuous stream of callers. Among those present other than the members of the Institute were Vice-President Davis, Senator Hoar, Profes-sor Baird, General Sherman and others of prominence in the National Government.

Wednesday's Session.

The second session of the Institute took place on Wednesday morning, the meeting being called to order shortly after 10.30. After a few preliminary remarks by President Metcalf, Mr. E. F. Loiseau, of Philadelphia road a paper on

delphia, read a paper on A PROCESS FOR MAKING ARTIFICIAL FUEL from anthracite and bituminous coal-dust, and the applicability of the process to the utilization and solidification of the slacking lignites of the West. After having briefly reviewed the past history of the process, Mr. Loiseau announced that now, after fourteen years of untiring efforts, he was pleased to see that the latter were not entirely wasted, works at Port Richmond, Pa., now being successful. works at Port Rienmond, Pa., now being suc-cessfully engaged in turning out a product equal, if not superior in many respects, to ordinary coal. He stated that the fuel now made by the Loiseau Fuel Company, at Port Richmond, finds a ready market, the demand increasing steadily, consumers appreciating it for domestic use as well as for manufacturing purposes, thus leaving no doubt as to is merits. When Mr. Loiseau first introduced the process it was proposed to manufacture artificial fuel from a mixture of clay and anthracite coal-dust, this mixture being formed into lumps of convenient size, which, after having been thoroughly dried, were passed through a water-proofing solution. The machinery was found to work in a highly satisfactory manner, but the drying-ovens through which the blocks of fuel were to be passed on wire-cloth belts, proved to be a failure, since the fuel, after having gone through some four or five times, was found to still be in a moist condition. This, however, the still be in a moist condition. ever, was not entirely unexpected, and Mr. Loiseau consequently abandoned the use of

chines to manufacture from 25 to 60 tons per day, for the accommodation of coal operators. Different kinds of coal dust may be mixed and pressed into blocks, producing a fuel meeting the requirements of all industries. Pulverized ores mixed with coal dust and a mitable current of the second control of the coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust and a mitable current of the second coal dust may be mixed and present of the second coal dust may be mixed and present of the second coal dust may be mixed and present of the second coal dust may be mixed and present of the second coal dust may be mixed and present of the second coal dust and a secon suitable quantity of flux may be pressed into blocks, and by igniting these it is stated that the metal contained in the ores is obtained coal. In general, coal of more recent date than that of the chalk formation is termed brown coal, while that formed at an earlier period is called pit coal. According to various degrees of decay we distinguish:

thus insuring thorough combustion.

I. Fibrous brown coal-fossil or bituminous wood. 2. Common brown coalcompact brittle

masses exhibiting conchoidal fracture.
3. Earthy brown coal, being a mixture of brown coal and earthy matter.

negotiations were said to be pending, and it will probably not be long before compressed lignite will appear in the Western markets, appreciated as much as com pressed anthracite coal dust is appreciated in could fully indorse all that had been said concerning the fuel, and delivered some complimentary remarks regarding Mr. Loi-

eau's process The second paper of this session was on COAL IN THE SANTA ROSA DISTRICT OF NORTH-

by Mr. William H. Adams. After referring briefly to the coal fields of the Rio Grande, extending over hundreds of miles, and to the lack of surveys or examinations, Mr. Adams stated that in this region nature has disclosed near the surface seemingly inexhaus tible beds of semi anthracite and bituminous coals. Several openings which have been made about 100 miles northwest of the Rio Grande confirm the excellence of the coal found in this locality, which at one time must have experienced great volcanic disturbances, the seat of the volcanic action being marked and easily traceable. Silver is also found in small quantities. Anthracite veins have been opened to a depth of some 240 feet, and surface openings at several points give evidence of large deposits of the valued treasures. Some of the coal found in this region is estimated to yield about 60 per cent. in weight of good coke, and 50 ovens will be erected in the coming spring. Bituminous coal is found from 30 to 50 miles east of the Rio Grande, and lignites are disributed through a large portion of the countributed through a large portion of the country drained by that river. The future commercial value of these coal deposits must be determined by metallurgists and railways. After a brief discussion of this paper, Mr. J. C. F. Randolph, of New York, gave some information concerning

A NEW MILL AT BATOPILAS, MEXICO. this being a 15-stamp mill, of 750 pounds per stamp, and designed to run at a speed of from 80 to 85 "drops" per minute, the drop being about 8 inches high. The stamp stems are to feet long and are provided with Coleman tappets, while the mortars are furnished with cast-iron bed-plates. Each mortar is provided with a self-feeding arrangement, and the reduced mass or pulp is led off in the usual way, passing directly to the pulp-boxes, which are situated under a turn-table for the pulp cars. The settling pans have cast-iron bottoms, the sides being of boiler plate. The cost of the ironwork is estimated to be about The reading of this paper was followed by

eliciting considerable discussion, in which a number of members participated. The next paper, by C. Henry Roney, of Philadelphia, gave some information concerning the Thompson ore pulverizer, a full description of which, together with an engraving, was published in our columns but a short time since, thus obviating the necessity of further

dwelling upon it at the present time.

The afternoon session at 3 o'clock was entirely devoted to eulogies of the late Alex-

TESTS OF IRON AND STEEL AS STRUCTURAL MATERIALS

It will be remembered that a commission consisting of several distinguished army and navy officers, as well as civil engineers, was appointed by Congress several years ago, the object being to make thorough investigations into the above subject, and to publish the results arrived at for the benefit of all for whom they had interest. A testing machine was built at Watertown, Mass., and, though everything was ready for the execution of the proposed experiments, the work of the commission was never carried out on account of the untimely exhaustion of the appropriation (\$75,000) made by the Government. Of late, however, considerable attention has been given the subject, and at the last meeting of the American Society of Civil Engineers, it was resolved to urge the Government to resume the investigations and experiments. Mr. Ashbel We'sh, president of the American Society of Civil Engineers was introduced by President Metcalf, and, after a few remarks of general interest, gave brief outline of the subject, indicating what should be done to insure greater safety in structures of importance. Mr. Charles MacDonald, who was then called upon, read the following interesting paper on

THE NECESSITY OF GOVERNMENT AID IN OR

labor and increase net profits, else he will be left behind and see his neighbor prosper. In Egypt you can find to-day the same old mills and pumps, worked by camels iron pyrites, its combustibility being less comprehensively treated in papers already

Unfortunately, however, the results of these concerted efforts have not been to materially increase our stock of knowledge in the direction sought for, and as the necessity for this information is becoming more and more apparent as the demand for structural material increases, it is believed that by continuing the agitation, by means of discussions in this and kindred societies, whose members are vitally interested in ob-taining reliable data as to the properties of the materials they are called upon to work with, public opinion may be educated up to the importance of exerting such an influence upon the lawmakers of the country as will result in the formation of a competent board, with adequate means at its disposal to carry out this great work in a manner alike acceptable to the makers and users of the material in question. It may be proper, in the first place, to glance briefly at what has been attempted thus far, then to indicate some of the more important lines of needed investigation, and finally to consider reasons why Government aid may with propriety sought for in carrying on the work. convention of the Society of Civil Engineers, held at Chicago June 5, 1872, on motion of Gen. Wm. Sooy Smith, the following resolution was adopted:

Whereas, American engineers are now

mainly dependent on formulæ for the calculation of strength of the different forms of iron and steel, not based on experiments upon American materials and manufactures;

Wherers, These differ greatly in many of their characteristics from those of foreign production, both in their nature and forms;

therefore,
Resolved, That a committee of five be apcointed to urge upon the United States Government the importance of a thorough and complete series of tests of American iron and steel, and the great value of formulæ to be deduced from such experiments.

Pursuant to this resolution a committee was appointed, by whose efforts Congress was induced to pass a law, March 4, 1875, providing for the appointment of a United States Board to test iron and steel, and an appropriation of \$75,000 was made for that urpose. The board appointed under the S. Laidley, Ordnance Department, U. S. A.; Com. L. A. Beardslee, U. S. N.; Lieut. Col. Q. A. Gillmore, U. S. A.; Chief Engineer David Smith, U. S. N.; Wm. Sooy Smith, C. E.; A. L. Holley, R. H. Thurston, A. M. C. E., secretary, and they were ordered to report from time to time to the President of the United States.

The first and most important duty of the board was deemed to provide an accurate testing machine. This proved to be a more serious matter than was at first supposed. There were no machines in the country which could be considered as giving anything more than approximate results, and to construct a new machine upon approved principles required much time and a large expenditure of money; much more, in fact, was represented by the sum paid for it. At length a machine was completed, which for accuracy of the results obtained and range of power exerted is unequaled perhaps. of power exerted, is unequaled perhaps in the world. Owing to the length of time expended in completing it, however, the original appropriation became exhausted and the board was legislated out of existence, having had scarcely an opportunity to verify the capabilities of the very instrument which bottoms, the sides being of boiler plate. The cost of the ironwork is estimated to be about fostering care, and through the proper use \$16,000, and the entire cost of the mill is of which so much valuable information could be obtained.

As might have been supposed, the board a paper on the comparative efficiency of fans and positive blowers, by Henry M. Howe, of this machine. About 150 specimens of of this machine. About 150 specimens of steel were analyzed and tests of their physical and mechanical properties made, with a view to determine the relation between chemical constitution and useful qualities. In wrought iron the effects of reheating and re-reling were carefully examined, and the report contains valuable information as to the different processes of making and rolling iron, the effects of various kinds of strain, the best methods of making cables for large ves-sels, and to determine how uniform strength ordinary interest and importance, of rolled beams and shape irons, for which ve are now dependent almost entirely upon heoretical formulæ. Although the board theoretical formulæ. theoretical formulae. Although the board had ceased to exist the machine remained the property of the United States. It is lo-cated in the Watertown Arsenal, near Boson, under the immediate charge of the Ordnance Department of the army, and is nominally at the service of engineers and others who may be able to defray the neces-

sarily heavy expenses of working it for their own private benefit. So much for what has already been accomplished. Should the efforts now being made to revive interest in the subject prove successful, the field for investigation will be successful, the field for investigation will be found to be most fruitful of results. To men-tion a few instances only: In the depart-ment of bridges there were required for last year's construction not less than 8000 tons of iron and steel, representing say 50 miles of bridges, over which the safety of life and limb is supposed to be assured by the acouracy of the calculations of the designers, no less than the quality of the material em-ployed. Of this material upward of 35 per cent. is in the four compound sections is in the four compound solly adapted to resist comp strains, and yet, until quite recently, all the experimental data upon which such sections are designed were obtained through the instrumentality of testing machines, which, particularly at high pressure, are liable to give HE NECESSITY OF GOVERNMENT ALD IN ORGANIZING A SYSTEM OF TEST OF MATERIALS from Mr. Holley's paper on the U. S. Testing USED FOR STRUCTURAL PURPOSES.

Machine at Watertown, Vol. VII, Transactions of the Institute, page 259, alluding to C. E. Emery's device for overcoming packing

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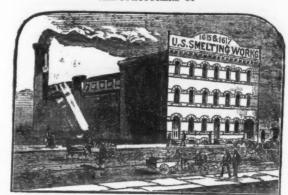


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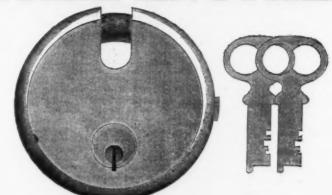


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Experience would and corender verify

hydraulic testing machines as heretofore constructed. The readings of the permanent weighing apparatus, as compared with those of the cylinder gauge when the piston was not revolving, showed, in some cases, an error of 40 per cent."

It is safe to say that the recent fall of one of the most important bridges in the country would not have occurred, if at the time of its construction the engineer could have tested full-sized sections of his material on such a machine as the Government now owns at Watertown Arsenal. The tension members of bridges are in the form of eyebars varying in sectional area from I to IO Until quite recently it was as inches. sumed that the same strain per square inch might be applied indiscriminately without regard to the size of the members or to the regard to the size of the members of to the amount of work done upon the material in the rolls, but the few bars which have already been tested at Watertown clearly indicate that this is a most erroneous assumption, and one of the first duties of a testing board would be to establish the law governing the diminution of strength due creased section, and to establish the relation between ductility and ultimate strength. Then would follow tests to determine proper form of head, and such other details of manufacture as might suggest themselv Of rolled beams there were produced last year upward of 50,000 tons. This form of product is used chiefly in floors of buildings, often to sustain great weights, as in ware houses and somewhat also as stringers in bridges. Their strength is estimated by theoretical formulæ, in which the physical constants are taken from experiments upon irons tested under circumstances tirely different from those obtained in actual practice. Fortunately for the cause of safety in the use of such material, it is probable that the formulæ in question do not represent the full strength, and that a considerable amount of unnecessary weight is loaded upon our structures in consequence, but there is all the more reason why the actual strength should be determined by in order that a uniform fac experiment, in order that a uniform fac-tor of safety may apply to every member of a structure, or, in other words, that it shall be equally strong in all its parts. Did time permit, it would be possible to point out many other directions in which experimental knowledge is sadly needed, but if nothing else were done than to determine practically the laws which govern the strength of com pression and tension members of bridges, and the flexure of rolled beams, a very g advance would be made in our modes of great struction, and a greater safety would be assured to the hundreds of thousands of people who are constantly trusting their lives

wpon such structures.

What has been said regarding the importance of testing particular construc-tions applies equally to iron and steel; but there are special reasons for investi-gating the properties of steel which should command attention. It is admitted to be the metal of the future, for large constructions at least; it is stronger and more homogeneous than the best iron, and owing to the substitution of mechanical appliances for wasteful muscular effort in its manufac-ture, there will come a time, and that before very long, when it can be furnished commercially at less cost than iron, in large quantities and of uniform quality. It only mains now to determine by a constant and interested authority what the general characteristics of this material are to insure for it a continually increasing demand. At present the finished product of the converter is prin-cipally in the form of steel rails. It so cipally in the form of steel rails. happens that the best testing machine for a steel rail is the track, and railroad comsteel rail is the track, and railroad com-panies, by careful inspection taken in con-nection with chemical analysis, are thus experimentally determining the quality of steel which answers best for that particular purpose. For other constructions, such as bridges and ship work, very different quali-ties of steel are required, depending on the nature and direction of the forces to which it is subjected; and until all such questions are is subjected; and until all such questions are determined by competent and disinterested investigators, the benefits to be derived investigators, the benefits to be derived from the cheap production of steel, by the pneumatic or open-hearth process, will for a long time be confined to the favored few who are engaged in supplying the demand for steel rails. It is hoped that enough has been said to establish the fact that a producing class of the community stands in day of certain scientific information, which, if obtained promptly and in a manne tend to improve and enlarge one of the 63,000 pounds. This clearly shows to what staple industries of the country. From the extent tests, as ordinarily conducted, may be depended upon. Cart in Lyle then made be obtained by the assistance of the general a number of valuable suggestions as to the country. Government. Shall the effort be made to secure such assistance? It may be asked, "Why should the United States Government appropriate money for the purpose of making experimental investigation which might as well be undertaken by those who are immediately interested?" In reply to this, the following quotation from the memorial recently presented to Congress by the American cently presented to Congress by the American Society of Civil Engineers will commend tiself: "And your memorialists further represent that there is no prospect that the necessary tests will be made without the aid facturers or builders test their own materials, they might not give the public the benefit of their experiments; such experiments of the Government. Should private manutheir experiments; such experiments would not have that assurance of impartiality and that high authority which those made under the authority of the Government would have. Experiments conducted by private parties would be so different in the objects, methods and circumstances of applying tests as to render it impossible to properly collate and verify them; they would, therefore, be of comparatively little value in ascertaining accurate general results." I am aware that it

tial aid in determining their general character istics. Again, the Government of the United States is in possession of a most important element in the problem—the testing machines already referred to. It represents a very considerable expenditure in money and year of patient labor, which it is safe to say would never have been expended had there not been a well-grounded hope that an amount of knowledge would be obtained through its instrumentality which would contribute largely to the general good. In its present shape this machine is utterly unable to meet the wants of even such private demands as may

be forced to use it. I am informed by an engineer now engaged in the construction of one of the most impor tant bridges in the country, that he recently sent to Watertown nine steel eye-bars to tested, and it required 71/2 days to make the tests, while the cost to his company was at the rate of \$15 for each bar. This is admitted to be due to the fact that there are no means at the disposal of the department wherewith to engage an efficient permanent staff of assistants to handle the specimens promptly, and the result is that a most valuable instrument for scientific research is allowed to remain in comparative idleness fo the want of a few thousand dollars. As to the most effectual means of expending Government aid in the direction sought, may be differences of opinion, but all are agreed as to the necessity of obtaining re-sults which could be accepted as authority alike by manufacturers, builders and engineers. This could be accomplished either by the appointment of a special committee, similar to the one created under the law of March 4, 1875, with an adequate appropria tion to purchase materials and make a com-prehensive series of tests; or, failing in this moderate sum of money might be placed at the disposal of such an institution as the one under whose auspices we are now assembled, to be expended in testing such construc tion as would be furnished from time to time by engineers and others in their regular practice, with the understanding that all information thus obtained should become public property by regular publication in the "transactions" of this and kindred societies. Could we feel assured of the permanence of a special commission, the members of which could devote the necessary time to the work, this would doubtless be the most satisfactory to a large majority of those interested There are uncertainties, however, connected with all such special legislation in a Govern-ment constituted as ours is, that should be carefully considered in this connection less we should be compelled to undergo a similar experience to that which befell the previous board, which, from no fault of its own, was brought to an untimely end after having perfected the means by which for the first time really accurate testing could be done in this country. It is to be hoped that eventually a Department of Public Works will be instituted, having co-ordinate power with other departments, as of the Interior for example to which all questions relating to the expenditure of public money, either for internal im provements or for scientific investigations connected therewith, may be referred, and through which the interests of the producing classes, including engineers, builders and manufacturers, might receive that special consideration which their importance demands. Whatever method may be adopted will be liable to defects as a matter of course We must be content to go slowly and surely, be patient and judicious in advocating or claims, and, above all, to bear in mind that if our cause is a good one, as we believe it is, and we de not succeed in impressing its importance upon Congress, it will, in all proba-

lity, be our own fault.

General Meigs stated that his views coincided in all respects with those of Mr. Mac-Donald, and that since the Government was perhaps the largest single consumer of iron and steel, it would seem quite natural and proper that it should conduct these tests on

a sufficiently large scale to be of value.

Captain Lyle, of the Ordnance Department, spoke of his experience concerning the unreliability of ordinary testing machines, and stated that in some of his experiments he found that long specimens of metal gave results entirely different from those obtained when testing short specimens. In one particular instance, a gun having a strength of 63,000 pounds (as shown by experiments in the testing machine) burst when subjected to a strain not exceeding half this pressure. Subsequent experiments with ragments of the gun, turned down to a suitbest methods of promptly publishing the results of work, and as to the removal of the testing machine at Watertown, Mass., to a point more conveniently located. This removal would, of course, entail considerable expense, as well as time and labor, besides necessitating the erection of a suitable building for its location.

A letter was also read from Col. T. T. S.

Laidley, to the Chief of Ordnance, in which some interesting statements were made concerning the daily amount of work done by the machine and the necessary expenses to conduct this work.

The president then called upon Mr. E. D. Leavitt, Jr., who had availed himself of the Watertown machine very largely, and who consequently had considerable experi-ence concerning the conducting of tests, and the practical advantages to be derived therefrom. Mr. Leavitt responded as fol-

THE WATERTOWN ARSENAL TESTING MACHINE

The writer desires to state briefly his riews respecting the great practical comparatively little value in ascertaining accurate general results." I am aware that it is often a difficult matter for legislators to draw the line between public and private interests, and that in the multiplicity of claims made upon them they must be expected to look doubtingly upon anything that calls for money; but it would seem that where such enormous revenues are derived by the country from the affort to secure the where such enormous revenues are derived for the past two years been placed at the by the country from the effort to secure the service of the public upon the payment of a

that have come under their notice? which the reply must be that the interest of clients are generally paramount to the interests of science, leaving no time for properly working up the data for publication. is also natural that special information ught and paid for should be considered personal property. Engineers are almost invariably busy men, and rarely, very rarely is there found one among us who, like our lamented Holley, has apparently time and capacity for all things. The writer's advantages have been exceptional and men possessing similar qualifications are needed for the permanent commission, in order that the full advantages of the great testing machine be realized. Our knowledge regarding the strength and behavior of material under strain is yet very limited. The best and most experienced constructors ad-The mit and lament this. In these days of high speed by railways and steamship, of long span bridges and deep mines, engineers must know what materials will safely endure: life depends upon it, and every means available for increasing and disseminating information on a subject which is of such vital consequence to all should be provided. The writer freely acknowledges that he has learned more about structural materials through the tests made at Watertown during the last two years than in 25 years' previous experience. At the same time he is aware that he has by no means secured all the advantages to be obtained from the data in his possession, or that might readily be secured by a commission of experts, specially devoted to the duty, with ample time for observation, and provided with the best known appliances on making experiments.

Mr. T. C. Clarke, who was then called upon, said that the era of scientific investigation, upon which we expect the provision of the control o gation, upon which we are now entering, called for experimental tests of full-sized members of iron and steel structures. We are not in want of a machine to do this work, which should be done for the benefit of our country, but simply require a board of scientific men, under whose immediate supervision the experiments should be conducted and the results published. Bridge builders, ample, are fully convinced of the fact that steel is the structural material of the future, but at present it is used to a limited extent only, owing to the small store of knowledge which we have of its resistance to strains, so far as bridge members of large size are con-

Mr. O. Chanute, vice-president of the American Society of Civil Engineers, said that foremost among the many problems to be solved by the engineering profession were the investigations concerning the behavior of steel under strain, the influence of size upon strength, and many others of equal importance. At present we are dependent upon the results of experiments made abroad, or we must wholly rely on the results given by application of theoretical formulæ, which, it ould be stated, very rarely make provision

for cases such as occur in actual practice.

Mr. A. P. Boller, a prominent engineer, interest attached to it. Mr. Boller spoke as

THE NEED OF A NATIONAL BOARD FOR TESTING THE METALS OF CONSTRUCTION.

In the victories of peace, as well as of war, the science of engineering has played a prominent part, if, indeed, not the leading While it might be interesting and food for profitable thought to trace the development of sion. engineering from early times in its bearings upon the social betterment of mankind, it will be sufficient on the present occasion to suggest a few thoughts that it is hoped will aid the unprofessional listener to an appreciative consideration of the subject matter laid for to-day's discussion, and possibly lead the professional brother to a higher conception of the profession to which he belongs.
Since the advent of the railway era it is
difficult to grasp the sequence of historic
events that have led to the wondrous develpment of mechanical science, making posfible the civilization that is our daily

and opening up a vista of future intellectual and moral advancement among the nations of the earth before which the imagination becomes hopelessly lost. Even now, looking back over a period of only half a century, we often fail to realize the vast change in the back over relations of individuals and nations to each other, brought about by the results of those mechanical discoveries which have made the whole world kin, thus exercising a resistless eveling induence that bears fruit politically by the country from the effort to secure the exclusive consumption of American manufactures of iron and steel, it would be asking no more than justice for the users of these materials that the Government should lend substan-

and extreme accuracy of the machine, that this view it seems almost like a work of the profession of engineering has a followerprofession, and through them the general public, do not reap the advantages that they ought, when it is considered that the machine is public property. It may be asked, Why do not those who have made use of the machine make public the results of the tests workers in the domain of applied science.

a first-class manner by those at present in charge, but with the rapidly increasing demand for tests a larger force of experts is factory state, and must remain so until exabsolutely necessary, all of whom should be periments on the strength of materials are of such reputation as to command the conmade on a scale which a national governfidence of the profession and the public. There seem to be certain men who, like Regnard now admitted crude experimenting, on nault and Tyndall, are born experimenters, which the physical data in use all over the world is based, has brought out during the tion cannot be overrated. In steel particulast decade the fact that our knowledge of larly there is much to learn—at least, by the the properties of iron and steel is less accurate than it was heretofore supposed, and that the scale on which such experimenting has been done is utterly insufficient to determine the true value and application of metals in the forms and masses as applied in the arts. To the layman, with all the tri-umphs of modern engineering before him, this statement may seem contradicted by those engineering successes, but such works are always based upon a "factor of safety," made large enough by prudent engineers to cover up not only the imperfections of workmanship always inseparable from the best of human endeavor, but also those deficiencies of exact knowledge regarding the properties of metals used in construction that past experimenting has disclosed. Every factor of safety, therefore, is composed of two parts—the factor of safety proper, and the factor of ignorance. It is the determining of the exact proportions of this factor that engineering science now demands, that ignorance may be eliminated and dishonesty checked from taking refuge in the protection due to the margin allowed for the "factor of ignorance." This "factor of safety," such as it is, is the sole protection of the millions of people daily carried by the railways of the world, and all mind, and it is hoped it will bear fruit in due public buildings and places of assemblage. Further, as an economical measure, the estab-lishment of a factor of safety based on exact scientific use and economical application of which becomes of the first national importance. It may be a revelation to some that there is no standard of authority as to the strength of the metals of construction, and that engineers are by no means agreed upon the limits of strain that may be imposed on but under more exacting requirements, more extended observation and higher technical training, they have arrived (with rare

> used in construction text-books that have ever been published.
>
> And in this connection it is proper to confess selected by the Ordnance Board, and ap

and extreme accuracy of the machine, that it has since become my practice to have tests of all materials used in construction that come under my charge made at Watertown. As a consequence, nearly 100 tests have been made for the writer's account alone, and some 2,0 additional for work built from his designs. It may be confidently affirmed that the factor of anxiety on all these structures is exceedingly small, as far as the quality of material it concerned, while it undoubtedly is a very great advantage for parties interested in construction to have any tests that come within its scope made on the Watertown machine. The engineering profession, and through them the general public, do not reap the advantages that they ought, when it is considered that the machine is some construction to have any tests that come within its scope made on the water of the profession of engineering has a follower—at the center of our national life, to meet here at the center of our national life, to plead not only for a practical recognition of the not only for a practical recognition of the work to which their lives are devoted, but also for national aid on a scale beyond that of private effort, to the end that mechanical science may be attituded to exist the carried to a higher plane than ever yet to the end that mechanical science may be attituded to exist the carried to a higher plane than ever yet. Sons, by whose permission they were given to the community. Possibly this is strong language, but none too strong when we consider that the work for which we plead in the community. Possibly this is strong language, but none too strong when we consider that the work for which we plead is on workers in the domain of applied science. What so intimately affects the people in every household is worthy of the profoundest sympathy of the legislative powers, and the members of any Congress who grasp this subject as its magnitude and importance demand, will live to see not only a great work performed in the interests of science and magnificants in the interests of science and magnificant seeds to be a subject of the profoundest sympathy and the performed in the interests of science and magnificant seeds as the performed in the interests of science and magnificant seeds as the performed in the interests of science and magnificant seeds as the performance of the per manufactures, but also a web of protection thrown around every hearthstone in the land, by removing to a great extent the ignorance and empiricism to which too many broken bridges, fallen buildings or imperfect weakling test and cannot be neglected hereafter. It is a from the fact that his residence is but a short distance from the Watertown Arsenal, thus affording the opportunity of being personally present during tests, with very little loss of time. Such privileges can be enjoyed by very few of the profession without serious inconvenience. The machine is operated in a first-class manner by those at present in charge, but with the rapidly increasing. or steel, they are misleading as to absolute values, only determinable by testing the sizes The question of abrasion has still to be investigated, and when one reflects that this is a vital question in the economical use of steel rails, the importance of such an investigaprofession at large—few engineers having the temerity to use it with the present lack of knowledge of its physical properties; yet it is a metal that the constructive demands of the age are forcing on the attention of engineers, and, as the metal of the future, a full and elaborate series of physical and chemical experiments, upon such shapes and sizes as are needed in actual construction, should be undertaken at the earliest moment. Another branch of investigation is greatly needed, and that is upon the effect of vibration and impact-on which the life of metal structures largely depends. Some few investigations in this branch of experimental research have been made by Fairbairn in England, and in considerable number by the late Baron von Weber in Germany, both pointing in general terms to a period of destruction under repeated impact and vibration, should such successive impacts strain the material beyond a certain point. It would be a long catalogue to enumerate, with would be a long catalogue to enumerate, with any fullness, the unexplored regions await-

> other modes of mechanical transportation, to season. The American Institute of Mining say nothing of the occupants of innumerable Engineers is only an advance guard in press. ing this subject upon the attention of Congress. The two other representative bodies of engineering science—the American Society data deserves more than a passing comment—
> an economy resulting from a direct saving in
> the use of materials, in the broadest sense,
> and in the prevention of their abuse,
> Macqueet hy resolution from a converging, as it were, the voice of and in the prevention of their abuse.
>
> Measured by product, the United States is rapidly coming to the van among the nations, the factories, mills and workshops of the world in the manufacture of iron and steel, being second only to Great Britain.
>
> The past year witnessed some 6,000,000 tons of iron and steel made in this country, the in that of the whole people. This idea of establishing a national board for the testing of American metals is not a new one, and it is proper in this place to refer to past efforts in that direction. In 1875 such a board was constituted by act of Congress, on recom-mendation of the House Appropriation Comiron and steel under given conditions. Some mittee, of which the lamented Garfield was years ago they thought they knew more; chairman. The personnel of the board were selected with great judgment and repre various departments sented satisfactorily the of the industrial and engineering branches exceptions) unanimously to the conclusion of science. The Ordnance Department of the that no authoritative data exists for designing metallic structures, nor can exist, until direction for ordnance information, and had some central authority, like a national already in hand the construction of a testing government, establishes a system of experiment, establishes a system of experiment, establishes a system of experiment. menting upon the metals on scientific prin-ciples, and on a scale that bears some pro-a scale and with a degree of accuracy never portion to the shapes and masses as actually before attempted. On the creation of the Testing Board, the work of the Ordnance From the preceding remarks it must not be concluded that engineers have all these years been practicing a rule of thumb, and depended upon their intuitive perceptions for the successful practice of their profession. It must be remembered that metallic constructions are of comparatively recent scheme of work covering all possible uses of constructions are of comparatively recent scheme of work, covering all possible uses of date, and that their development is dependent upon a great volume of experimental special department of investigation. They at that takes more or less time to accumulate and analyze. Much experimenting has been done, and is now being performed continuously in all parts of the world by private individuals, either for trade purposes or private investigation. A considerable portion of such work gets before the profession in a fragmentary sort of way, finally getting into our text-hooks as authority supplements. into our text-books as authority, supplementing the English tables that have been handed down through all the engineering unadvised in the matter, some explanation The testing machine And in this connection it is proper to confess that American practice is largely governed by the tradition of English experiments, which have come before the world in a more accessible shape and greater fullness than could be elsewhere obtained. These English experiments, dating from the construction of the Britannia and Menai bridge tubes, have ever since been published the world over as a current property of the American Society for the Afrancan entering the provided by the Ordnance Board, and approached by the National Board, and approached by the Nationa



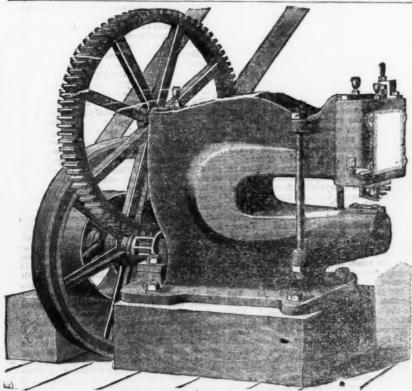
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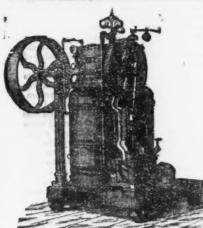
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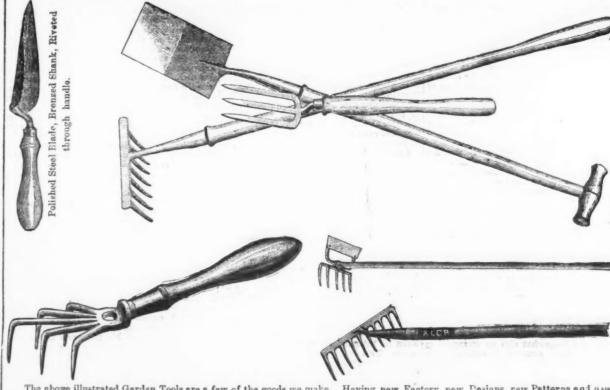
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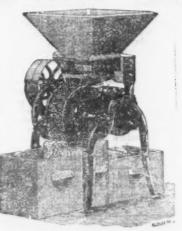
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TESTIMONIALS

From the Walteorth Manufacturing Co., Buston,
Bosros, Jan. 18, 1879.

Mr. Fira Sauger, Worcester: (4 the manumenthods we have praceded in separating from from brass turning son dillings, we have found none equal to your machine. Very truly yours,

E. C. HAMMER. Trees.

From the Benedict and Bursham Mig. Company,
Waterbury, Cogn.

Waterbury, Cogn.

FECK BROS. & CO.

From Kee, Barton & Fales Machine and Iron Co.,
From Kee, Barton & Fales Machine and Iron Co.,

From the Walterth Manufacturing Co., Boston, Mr. Exra Sawyer, Worcester: Of the many methods we have prached in separating fron from brass turning and alling, we have prached in separating fron from brass turning and alling, we have prached in separating fron from brass turning and alling, we have been supported by E.C. HAMMER, Trees.

From the Benedict and Burnham Myr. Company, Warestelly, Cons., Aug. 19. 1870.

Fixed Sawyer, Eq. Worcester, Dears Six. We hand you check for Meial Soparator. It appears to do the work very well, and is quife a soving of tab rover the clup process of cleaning our washing, and menal having from in the same. Yours, &c. CHAS. BENEDICT.

From Union Water Meter Cox ps. 9. Worcester,

fully, GEO. M. RICE, Treas.
From Brown & Brothers, Waterbury, Cons.
Waterbury, Cons.
Fire Sawyer, Esq., Warcester, Alexa - Depart Six: Whave used your Magnette Metal Se, arafor sovera mouths; it works to our salisfaction, and we cheer

EZRA SAWYER, 33 Hermon Street, WORCESTER, MASS.

mechanical wonders, and will exert a press ure so delicate as to weigh to a nicety the strength of a hair or an egg shell, and so powerful as to bring into play a force of 400 ons, and in either case with absolute accuracy. This machine being a novelty in itself, like all new contrivances, could not be confined to any initial cost, and had to be carried through from beginning to end, as every original effort must be, regardless of ultimate they all required an exp enditure in a large way. Still, much valuable work was done, its work, and presumably on the same summer of 1877. This paper epitomizes the vate parties, and under a system of fees to cover the expense of operation and mainwork laid out for each, and the recapitulation. tion in this place regarding the division of labor and the scope of the investigations programmed, will bear witness to the wisdom of the committee and serve to emphasize the previous remarks upon the importance of a National Testing Board for the industries of America. These committees were :

(A) ON ABRASION AND WEAR. Instructions. To examine and report upon the abra-sion and wear of railway wheels, axles, rails and other materials, under

the conditions of actual use.

(B) ON ARMOR PLATE. Instructions: To make tests of armor plate, and to col-lect data derived from experiments already made, to determine the charactoristics of metal suitable for such

(C) ON CHEMICAL RESEARCH. Instructions: To plan and conduct investigations of the mutual relations of the chemical

and mechanical properties of metals.

(D) On Chains and Wire Ropes. Instruc tions: To determine the character of iron best adapted for chain cables, the best form and proportions of link, and the qualities of metal used in the manufacture of iron and steel wire

rope.
(E) On Corrosion of Metals. Instructions:
To investigate the subject of the corsion of metals under the conditions of actual use.

(F) On the Effects of Temperature. Instructions: To investigate the effects of variations of temperature upon the strength and other qualities of iron, steel and other metals.

(G) ON GIRDERS AND COLUMNS. Instructions: To arrange and conduct experiments to determine the laws of resistance of

beams, girders and columns to change of form and to fracture.

N Inon, MALLEABLE. Instructions:
To examine and report upon the mechanical and physical proportions

of wrought iron.
Inon, Cast. Instructions: To consider and report upon the mechanical and physical properties of cast iron.

(J) On METALLIC ALLOYS. Instructions: To

assume charge of a series of experiments on the characteristics of alloys, and an investigation of the laws of combination.

(K) On Orthogonal Simultaneous Strains. Instructions: To plan and conduct a series of experiments on simultaneous orthogonal strains, with a view to the

determination of laws.
(L) On Physical Phenomena. Instructions: To make a special investigation of the physical phenomena accompanying the distortion and rupture of mate-

(M) ON REHEATING AND REPOLLING. structions: To observe and to experiment upon the effects of reheating, rerolling or otherwise reworking; hammering, as compared with rolling and of annealing the metals. (N) On Steels Produced by Modern Pro-

CESSES. Instructions: To investigate the constitution and characteristics of steels by the Bessemer, open hearth and other modern methods.

(O) ON STEELS FOR TOOLS. Instructions: To determine the constitution and characteristics, and the special adaptations of steels used for tools.

additional appropriation, and reinforced by the moral support of leading scientific asso-ciations and schools throughout the country, asked for an appropriation of \$50,000 to continue their work. In July, the Senate added an amendment to the bill for sundry civil expenses of the Government, appropriating \$70,000 for the use of the Board to Test Iron and Steel This was opposed by the House members of the conference com-mittee, and the amendment was stricken out, and about the only satisfaction that could be obtained for the reason of the House opposition was in the remark of its chairman to a prominent engineer desiring light on the subject—"Can you tell me how many Democrats there are on that board?" The anxious inquirer left a sadder and wiser man, problem wondering if iron and steel had hitherto undiscovered political characteristics, as well as chemical and physical; if so, any board on testing the metals had a very large under-taking in hand, far surpassing that already laid out for investigation. A compromise amendment, however, was finally agreed amendment, however, was many agreed upon, covering an appropriation of \$19,-396.98, and at the same time legislating the board out of existence June 30, 1879. The work continued with the above financial

the appropriations as well. These efforts were not only cordially met by the then President, but made by him the subject of a special message to Congress; prominent Members of Congress made personal efforts to maintain the board as a national institution, and every possible argument was used for favorable Congressional action. All these efforts, however, failed, and the board was compelled to accept the inevitable and calmly resign itself to annihilation as its ultimate cost. In the meantine, during the building resign itself to annihilation as its ultimate of the machine, the members of the board and speedy fate. In the year preceding the did a great deal of independent work, largely preliminary, and often at their own expense. called for a report of its work (no report up As before remarked, the unexpected dis-bursements required for the testing machine hampered the board from the start, for while a great range of experiments was possible, independent of the testing machine, such as the breaking of full-size girders and trusses, they all yearized an expenditure in a large showed decided opposition to the board, the showed decided opposition to the board and far more than is popularly supposed, which ground. Finally, in June, 1878, the whole has been admirably covered in a paper by Professor Thurston, read before the American Association for the Advancement of Sciences of their for the Advancement of the custody of the Ordance Department, and the custody of the Ordance Department, which is the custody of the Ordance Department, and the custody of the Ordance Department of the Ordan Professor Thurston, road before the American Association for the Advancement of Science, at their Nashville meeting in the making it accessible for the service of pri-

This, in brief, is a history of the rise decline and fall of the United States Board for Testing Iron and Steel, from which much detail is necessarily eliminated, but exceedingly profitable for private examination and study. It belongs to the past and we must ommence anew, referring only to so much of he past as will serve to enlighten the future. What is wanted now is a more comprehensive law for the proposed new board than the one creating the old, and one fully reced new board than ognizing the national character of the work. To this end the powers of the board should be fully defined, and all necessary provision made for its successful operation. Such a board should not be tacked on in any way to an army department, but should be an independant creation reporting to the Secretary of the Treasury or the Secretary of the Interior. The work is almost entirely civil work, just as much as that of the Coast Survey, and should remain in existence as long as there is a metallic question, so to speak, remaining unanswered. Now that the testing machine is an accomplished fact, the board could profitably spend \$50,000 per annum in experimenting, and the center of its operations should be in the city of Washington, to should be in the city of Washington, to which point the testing machine should be removed from Watertown Arsenal, its present abiding place. The operations of the board should be reported in a yearly volume, such volume being readily obtainable by the scientific men and metal workers of the country, either by sale for the mere cost of publication, or a proper system of distribu-tion, whereby the object of its publication would be accomplished. There is a tradition that an edition was published of the only report made to Congress by the old board, which, if true, has most successfully failed to reach the very class of men who could profit by it, leading to a vague suspicion that its distribution was based on political and and anstruction was based on political and not scientific methods. If it is not possible under the existing methods of distributing public documents, to give the board absolute charge of distributing the yearly reports of their own work (and who, in the name of mmen sense, can better judge of where they should go), then the manner of distribution should be defined by the law creating the board. Too much attention cannot be paid to this branch of the board's work, since the very object of its creation would be defeated if the results of its work were not only accessible, but conveniently so, to all seeking such rison concerning information.

We are now brought to the consideration of rather a delicate question, about which there are differing views, and that is the remuneration, if any, of the men engaged in the work of the board. This work, properly followed up, would be an exceedengrossing one, calling for a pracany other pursuit, and it would seem manifestly unfair to demand that such labor and sacrifice should be unrecompensed. Again, the great majority of men qualified for such work (and there are not many such available) would be deterred from accepting service on the board, to whose work they would otherwise bring great enthusiasm and attainment, from sheer financial inability to perform unrecompensed labor. Whatever is worth doing is worth doing well, and to expect qualified men to do thoroughly the work is the one usually attaching to government salaried positions or appointments, and the possibility, therefore, of unworthy or incomis ended. Its aim is purely a scientific one fo prominently kept in the foreground, made the basis of all legislation concerning it the whole matter had better be dropped. Nor can such a board lend itself to the glorification of any individual, or set of men, but working for the whole community, should,

tions asked by the modern engineer are ex ceedingly complex ones, and that, while he would have been content a few years back to know the amount of strain an iron har for instance, would stand before rupture, mands now to know the reasons that cause different bars to yield different results, or the same bar to yield different results under varying treatment; or why a small bar should behave differently from a large bar of the same material. All such answers require a long series of experiments, and the gathering of information from actual experince, besides chemical examinations hitherto deemed unimportant; and in regard to steel, all that is known is so little compared to what is yet to be learned about its ties and adaptations, that the field search is almost appalling in its magnitude and intricacy. When the work of such a and intricacy. When the work of such a board is completed, it would be a grand culmination of its work for the United State lovernment to officially promulgate as an American standard the limits under which American metals should be used, par-ticularly in those works to the stability and endurance of which human life straining a point to add criminality to a violation of such standards, the moral sense of the community would very soon attack such criminality, and bold would be the man, no matter how unscrupulous, to use metals excepting under the conditions officially prescribed. Science would have sway in the factories and workshops, and the days of the venders of man-traps would be numbered —ignorance, if not eliminated, would be kept under wholesome restraint, and society would modify the field of that useful but dangerous member, in works demanding scientific knowledge, the "practical man." The theme of the proposed "Board for

The theme of the proposed "Board for esting American Metals of Construction" s indeed an inspiring one, the far-reaching onsequences being of vital interest to the American people. It is an endeavor, in the spirit of the age that is animating human thought in all parts of the world, to formu-late exact knowledge, so that rules not only late exact knowledge, so that rules not only for safe practice, but intelligent practice, may be established. Engineering must ever advance toward ideal perfection, which is the perfect harmony between theory and practice, the closer union of which adminis-ters to the necessities of mankind as well as to all wealth and luxuries—in a word, to the betterment of the whole human race. It is to contribute toward this goal as best they may that the American Institute of Mining ngineers meets on this occasion at the nation's capital, with Congress in session, to give voice to the one overwhelming topic among the engineers of America, in a firm reliance upon the patriotism, wisdom and concience of the nation's rulers, believing in but one result, so soon as the boon they ask n the name of the American people is once fairly considered.

Then prove we now with best endeavor What from our efforts yet may spring ; He justly is despised who never Did thought to aid his labors bring. For this is art's true indication

When skill is minister to thought; When types that are the mind's creation, The hand to perfect form has wrought. Prof. T. Egleston expressed his views dwelling more at length upon nany difficulties encountered in the us alloys, mentioning the cartridge manufacture as one in which the Government was greatly

Mr. John Bogart, secretary of the American Society of Civil Engineers, read the fol-owing communication from Mr. G. S. Mor-

THE WATERTOWN TESTING MACHINE.

I have had considerable experience with the testing machine at the Watertown Arse-nal, having had broken there sixteen large steel eye bars, besides quite a number of iron bars and two compression members. So far as accurate and satisfactory results are con-cerned the machine is all we could ask for, and the officers who have it in charge, together with their civil assistants, are th oughly conversant with its details and entirely competent to make the tests required. The principal defect is that the force is very inadequate. As the machine is arranged the weighing apparatus is at one end and stationary, th stationary, the measure of strain being car-ried from this to the scale beam by the fluid in a tube so small that it looks like a wire.
At the other end is placed the hydraulic press, by which the power is applied, this press being mounted on a small carriage, and called for by such a board as is proposed, unheld by two 8-inch screws about 4 feet above recompensed—a work, too, that will so richly the floor, which are, of course, strained in held by two 8-inch screws about 4 feet above of steels used for tools.

The committees being without funds, for reasons previously stated, were unable to do much more than begin their wisely-planned work, so that the board took measures early in 1876 to come before Congress for an additional appropriation, and reinforced by salaried positions or appointments, and the possibility, therefore, of unworthy or incompetent appointments. In other words, that the board would get into politics, and that the board would get into politics, and that the question of the chairman of the House Appropriation Committee, before related, would be asked with redoubled earnestness. Be this as it may, it should be thoroughly understood that the moment the proposed board takes on a political bias, its usefulness is ended. Its aim is purely a scientific one for of the material, but it may generally be said by nuts, worked by steam, operating pends largely upon the amount of elongation of the material, but it may generally be said practical ends, and as such must be established that for specimens which will stretch from on its merits alone, and if this view is not 2 to 3 feet, the actual time will be from two and to three hours. This is, perhaps, as fast as agreeing in tests of this kind should be made, admitting dissimilarity. the conduction of four tests per day, whereas the actual work done by the machine is not much more than one test per day, nine tests, as stated by Mr. Macdonald, having con-sumed seven and a half days. As the ma-chine is now operated its actual capacity is with genuine scientific enthusiasm, so conduct its work as to carry, with its yearly record of information gleaned and tabulated, the authority of the truth seeker, thus creating a thority of the truth seeker, thus creating a while it should be 1200. Compression members per year, while it should be 1200. Compression members as now made. To instance the bers can be more rapidly tosted, as the very varied opinions held as to proper quality to the truth seeker. information gleaned and tabulated, the authority of the truth seeker, thus creating a standard of undisputed authority, accepted as absolute by the community at large. The plunger carriage does not have to be moved. To get the full work out of the machine it is year or two years; it may take ten years to simply necessary to add to the present staff cover the field as it should be covered; of skilled men, a force of unskilled men, who but whether it takes a longer or shorter shall perform the different kinds of manual work continued with the above financial support, and is a matter of record in the committee reports, for a summary of which reference is again made to Professor Thurston's review of the work of the board before noted. Strong efforts were successively made, not only to secure the repeal of the law discontinuing the board, but to continue a cover the field as it should be covered; but whether it takes a longer or shorter it takes a longer or shorter shall perform the different kinds of manual labor required, and get specimens ready a thorough examination of the various schemes of experimenting it must necessarily understake. We must not be impatient for related to the continuing the board, but to continue

charge for use of the machine is now \$18 per day, besides a small charge for preparing the report on tests, and a charge for whatever expense is incurred in fitting the specimens. This charge is a very reasonable one, and, in the case of large steel specimens, like those which have been tested for me, it amounts to about one-quarter of the total expense of the test, the value of the bars destroyed and the miscellaneous charges for transportation and the like being about three times the actual charge for the test. In connection with a have already had thirteen tests made, and shall have about the same number more be-fore I get through, so that the tests made for this single structure will occupy the ma-chine for about one month as it is now As tests are now conducted, the re worked. As tosts are now conducted, the re-cord of tests is the property of the parties for whom they are made, special provisions having been made to prevent these tests from being published. To secure the fullest enefit of the machine all tests made ought to be published by the officers in charge for the benefit of all parties taking an interest in them, and the machine should be worked up to its full capacity. As the apparatus is the property of the Government, even if the present charge, which is little more than the cost of working the machine in the cost of working the cost of working the machine in the cost of working the cost of working the machine in the cost of working the cost of working the machine in the cost of working the cost of workin chine, is maintained, the public are justified n demanding that the results of its working shall be given to them. In the matter of the use of steel for structural purposes this machine is almost indispensable. The two points which must be considered in introducing a new material for structural pur-poses are, first, its capacity for use, and, second, its ability to stand abuse. The capacity for use is measured by the elastic limit of the material, which is the real measure of strength to which the factors should be applied; the ability stand abuse is determined by the behavior of the material after the elastic limit has been passed; and while this forms no measure of the strain which may be put upon the ma-terial, it would determine absolutely whether the material is fit for structural purposes or not. A material like glass, which is de-stroyed as soon as its elastic limit is passed, is wholly unfit to sustain strains in construc-tion. The old-fashioned high-carbon steels had the same character, and the material now demanded for structural purposes is a material which shall stand a great distortion after passing the elastic limit and before The machine at the Watertown rupture Arsenal is the only one now in existence which will determine these results on bars of the size which it is desirable to use in structures of such magnitude that it is important to use steel in them. This machine has a capacity of 800,000 pounds, and in the ourse of my experiments I have had occaion to work it, in several instances, to over 700,000 pounds. When it is remembered that about two-thirds of the whole stretch is accomplished during the application of the last 5000 pounds per square inch, and that this stretch and reduction of section at point of fracture are the best measures of the ability of the material to stand abuse, the importance of these tests is at once apparent. Although I leave hear a purpose of full-sized tests have these tests is at once apparent. Although I have had a number of full-sized steel bars strained beyond the elastic limit in other machines, I have not yet found a machine which would break, or even develop any considerable part of the stretch in any of the larger sizes of the bars which I have used. When it is remembered that the cost of mak ng steel now but slightly exceeds, and will obably soon be less than, the cost of manu facturing wrought iron, and that the elastic limit, which is the true measure of strain which may safely be applied, is about one-half greater, even in the lower and softer steels, than that of the best wrought iron, the invertence of a complete set. steels, than that of the best wronght iron, the importance of a complete set of experiments which will develop the ability of steel to stand, and so prove its adaptability to the purposes for which wrought iron is now used, can hardly be overestimated. At present it is considered best to limit its use to these parts of structures which are least

rought iron for all uses. Mr. Percival Roberts, Jr., of Philadelphia ave some striking instances of the unrelia-ility of testing iron and steel by the ordi nary metaods, and, as will be seen from hi paper, which we here give, showed in what an unsatisfactory state the testing of materials was at the present time. Mr. Roberts's paper is as follows:

o those parts of structures which are least table to sudden shocks and irregular strains,

though it can hardly be doubted that a steel

will soon be made of such uniformity and toughness that it will be preferred to

UNRELIABILITY OF MECHANICAL TESTS OF IRON AND STEEL. MR. FRESIDENT AND GENTLEMES present this evening a few brief notes from the standpoint of a manufacturer upon the subject of tests and testing of iron for struc subject of tests and testing of hon for struc-tural purposes, not that I have any new facts to which to call your attention, but simply to review a few of the very objection-able features of present modes of operation, and the dire necessity for important and At the present time, very radical changes. as most of you are well aware, proposals for materials are accompanied by certain speci-fications, to which in quality and tests the manufactured article is to conform. Evolved n many cases from the inner consc of some one more expert in theory than in practice, we find a few of them to be good, many bad, and some indifferent, no two agreeing in any particular excepting Appended are a few of those of the most prominent engineers and railroad companies, and which may be taken as representing the best and most intelligently framed specifications which we now have, for bridge work, I would note two lots of iron of which tests had been made by inspectors, and the results referred to the maker with the following comments:

LOT NO. 1-TEST OF IRON FOR EYE BARS.

Red. Area. Elongation. Break Ld. 4 x 1 1/2 in. 26 % 25 % 53,500

Bent 120° around 1½-inch bar with fracture. Red. Area. Elongation. Break Ld. 24 % 48,320 Size. 5 X 1 7-16 in.

upervision of the skilled men. The actual bend 180° without fracture and is therefore re

LOT NO 2-TEST OF IRON FOR BRIDGES-ALL MEASURE-MENTS TAKEN UPON A PARALLEL SECTION OF 10-INCH

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	X	3	5													48,000	13.1
	X	ī														48,000	25

NOTE. - The bar iron was all too soft, hence lacked trength; test showed this -they bent 120° with

By this we may see the very diverse opinions of engineers upon the qualities suitable for structural material. Again, to illustrate the very peculiar position in which manufacturers are placed by this conflict of opinion, let me quote from the charge of Judge McKennan to the jury in a case brought before the United States Circuit Court, and growing out of a condemnation of material furnished by t Messrs. Atkins, of Pottsville, to the Edge Mo Iron Co. for the New York Elevated Railroad. I quote as follows: "There is no doubt about the fact that this iron was to be used in a structure of a particular character; that it was a particular kind of iron, and that certain qualities were essential to the value of it in such use. It will hardly be said that a man who was making a contract for iron of certain dimensions, and was told that it was to be used in a particular construction, such as this, for instance—over which it was o bear heavy weights; over which locomotives and passenger trains were to be car-ried—it would hardly be fair to assume that the parties intended that iron which would be suitable for use in a bridge over which people were to walk merely should be furnished. Therefore, it is that the rule which I have stated is founded upon sound common sense; that where parties come together and make a contract in reference to a particular thing, and they both understand that it is intended for a particular use, that something which is not at all adapted to that use is not to be supposed to have been the subject of the con-tract between the parties. In a bargain and sale of an unmanufactured article, which the seller is informed at the time of the contract is intended for a special purpose, there is an implied warranty that the article to be furis intended for a special purpose innished is fit for the special purpose in-nished is fit for the special purpose incase the buyer necessarily trusts to the judgment or skill of the manufacturer. The law implies a warrant on the part of these plaintiffs, that the iron furnished by them inder their contract should be adapted, in quality and otherwise, to such intended use; I do not understand that there is a serious contest here as to the quality of this iron. It was merchantable iron."

Here we have it distinctly set forth that. there being no written or express agreement between the parties as to the quality of the material, it must be furnished su tab'e for its intended use. But who the judge of its fitness! What the criterion of its quality! when we are dependent upon a standard as shifting as opinion without proof can make it. To illustrate once more a difficulty which at present occurs, I have upon the wall A morandum of tests made upon some flats 12 inches wide, which were intended to meet requirements of Pennsylvania Railmeet requirements of remay, ultimate tensile road specification, namely, ultimate tensile road specification, namely, elastic limit, 23,-000; stretch, 15 per cent. in S inches. Two bars 12 x ¾ inches, and one bar 12 x ½ inches were taken at random from a large number; a piece 10 feet long was cut from each one and sent to Watertown Arsenal; from each one also a piece 16 inches long was taken and divided up the center, one-half being sent to Fairbanks and remainder retained at Pencoyd. From each of these pieces, namely, 6 x 1/4 inches and 6 x 1/2 inches, five test pieces were cut, being about I inch wide, and tested with result shown in following table :

0.007 0 by

From the results we see that a great want f uniformity occurs. By the Watertown of uniformity occurs. By the Watertown tests the bars would be accepted, while by Fairbanks' results two would be rejected. Some pieces by the Pencoyd tests would accept the bars, while others taken beside them would condemn them. The elastic limit in both Fairbanks and Pencoyd results is probably too high, owing to method of observation. The 12 x ½-inch bar at Watertown yielded through a blister, which opened Bent 120? around 2 luch wide. This ron should at 31,000 lbs. per square inch, which accounts

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is the SIMPLEST, CHEAP-EST and most CONVENIENT in the market. It will raise a 2000-POUND wagon, and is made of the best hard wood, riveted with iron rivets. The BEARING on the bottom is LONG, and the JACK remains FIRMLY in place in use. A SAMPLE will be sent upon receipt of \$1.50. LIB-ERAL DISCOUNTS to the

results a very surprising want of uniformity is made manifest. We have, as it were, broken chips and from them concluded the strength of timbers. Small samples of I square inch area or less and a few inches long have given us what we know of sections for structures of many times that area and length. In too many calculations has one square of section been of one value, no matter what its shape or the area of the piece employed. It may be well laid down as an axiom that in bars of irou, whether round or flat or square, the element of non-uniformity varies as the square of the sectional area. It is generally considered that iron of an average quality is capable of sustaining an ultimate stress of 50,000 ounds per square inch. A bar of a sectional area of I square inch should, and no doubt will, stand the above, but we err if from this we conclude that one of 6 square inches will do the same. There is one point which cannot be too strongly urged upon all employing wrought iron for structural purposes, and that is, to pay especial attention to the shape of the section upon which they are calculating strains. The bar of I square inch, whether round, flat or square, will give probably the same result, but put the same quality of iron into a wide thin plate, angle or channel, and a very different result may be obtained. It is, I think, much the same as if the material of a rope was placed in such a form that all the fibers did not sustain an even share of the strain and, conse-quently, some being overtaxed yield first quenty, some being overtaxed yield miss, causing rupture at a lower point than had they all borne an equal proportion of the load. We pay too great attention to ultimate breaking strength at the expense of the other far more important qualities of elastic limit, reduction of area and stretch; elastic limit, reduction of area and stretch; for strain a piece beyond its limit of elasticity and it is only a question of time when its failure will occur. I have very hurriedly and imperfectly shown a few of the disadvantages under which both the buyer and the manufacturer labor at the present day, owing to the methods of testing now employed. To whom shall we look for a remedy, and by what means? Briefly I answer, to the Government of the United States. Testing machines such as the one now at Watering machines such as the one now at Water-town, capable of testing the largest sections persons, who, engaged in this work alone, will be much better fitted to conduct tests

for low tensile strength of this bar. By thes

jected. We have our standard weight and measures, why not our standard tests? Let us sweep away all the conflicting specifications we now have, and in their stead place one in which we have a reasonable faith, it being based upon experiment, not theory. I believe by so doing a better manufactured article would be obtained, as mixtures of iron would not so continually be changed to give one a little more elasticity or another a trifle less stretch. This matter of Governmental action is one of vital importance. mental action is one of vital importance. Year by year the employment of metal in place of wood for structural purposes is inprocess of wood for structural parposes in-creasing in an enormous ratio, and we are ignorant, very ignorant, as to what we are using and the strains which it will sustain. The thrilling story of another bridge disaster chronicled over the world by the daily press chronicled over the world by the daily press bears a more eloquent testimony to this fact than any words of mine. It is not in the interest of any one section of the country or class of people that the aid of the Government is invoked. The expense to be incurred in these investigations is far too great for any individual corporation to bear, and the importance of the result is national. The citizen of San Francisco who may travel to New York is as much interested in the safety of every bridge upon his route as he who lives beside it all his life. A beginning has been made. The testing machine now in operation at the Watertown

the merits of his productions.

WASHINGTON NOTES

(From Our Own Correspondent.)

WASHINGTON, D. C., March 1, 1882. The case of Kennedy, importer of hoop iron cut and punched, against the Collector of Customs at Philadelphia, recently decided by Judge McKennan in favor of the importer, and ordered December 14 last by the Secre-tary of the Treasury to be taken to the Supreme Court of United States, has just reached that tribunal and now stands at the foot of the docket. The entry reads as follows: "1199. Attorney General—John F. Hartranft, Collector of Customs at the port of Philadelphia, plaintiff in error—Eastern Pennsylvania Circuit Court of the United States—L. P. Kennedy, trading as Kennedy & Brother"

It is evident that the Secretary of the

Treasury proposes to push this question ahead as rapidly as possible. Ordinarily the appeal would not be returnable until the term f October, 1882, and would not be likely to each the court until that time. If this case were to take its regular turn on the docket, it would not be reached for at least three years. It has been customary, however, for the court in revenue and other important Government cases where the questions Government cases where the questions involved were of sufficient importance to the Government, to advance them, so as to bring them to immediate trial. Whether this can be done at the present term of the court, which will last until May, is a question to be determined. It is known that the court had decided before this case was entered on the decket to advance on more cases at the decided before this case was entered on the docket, to advance no more cases at the present term. No less than six cases were thus declined. Should Secretary Folger see fit not to make the request, or should the court decline, there could be no contingency which would bring this case up for argument before next October. It will be remembered that this case involves the duty on hoop iron for cotton ties of a certain description and

Judging from the petitions which are being presented by representatives from the inland States, which have hitherto been rather dis posed to favor free trade, the cause of pro-tection of home manufactures and labor is taking firm hold upon the working masses. A few days ago Representative Springer, of Illinois, submitted a petition from the workingmen in various industries of Springfield, petitioning for the earliest consideration and prompt passage of the bill introduced by Hon Wm. McKinley, Jr., of Ohio, fixing the will be much better fitted to conduct tests than those who now in many cases undertake them as a very unimportant fraction of many other duties. Upon these machines, meanwhile, let experimental researches be conducted by properly appointed commissioners, among whom I deem it very essential that the manufacturer have a place. To the engineer, no doubt, belongs the determining of strains and the calculation of parts, but very many points will arise in the course of these investigations which can best be answered by one thoroughly acquainted with the practical working and details of manufacture. As a result of this research I would suggest the framing of a standard set of specifications for tests to which iron and steel for structural purposes should be subjected. We have our standard weight and measures, why not our standard tests? Let be given it, we earnestly pray you that the above-mentioned act be passed promptly, and that no amendment or addition be allowed to jeopardize the immediate placing on the statute books of this act of justice. This petition is signed by upward of 300 workingmen.

Some weeks ago the Secretary of the Treasury authorized the publication of the point of the decision in the steel bloom case. The following is the full text, just completed by the Secretary, showing the reasons by which he reaches his conclusions in the matter of

THE APPEAL OF JAMES LEES & CO

On 21st September, 1881, the appellants brought from over the sea, into the port of New York, 410 pieces of metal, weighing in Safety of every bridge upon his route as he who lives beside it all his life. A beginning has been made. The testing machine now in operation at the Watertown Arsenal is a monument to American engineering and common sense, and is it to be but labor wasted! Are we, for want of a mail sum of money, to lose results which every year will more than repay their cost. Gentlemen, I feel that, could this whole matter be placed before Congress in its proper light, but little delay would be experienced in prompt action upon the subject, and to continuated circles. S. LEE & CO. E. S. LEE & CO. E all 160,720 pounds, or, on an average, 392

at a loss to account for the unexpected failure excepting the manufacturers, who had observed a flaw in the metal. Such apparently mysterious failures are thus, in many cases, readily accounted for by the maker, who, however, is naturally not disposed to betray the facts, which would detract from the merits of his productions. as common as most others in the "customs 2000-POUND wagon, and is made of the best hard wood, riveted with iron rivets. The BEARING on the bottom is LONG, and the JACK remains FIRMLY in place in use. A SAMPLE will be sent upon receipt of \$1.50. LIB-ERAL DISCOUNTS to the trade. Sole Agent, T. G. CONWAY, 88 Chambers St., New York

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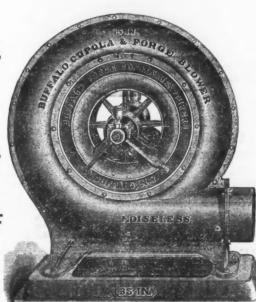
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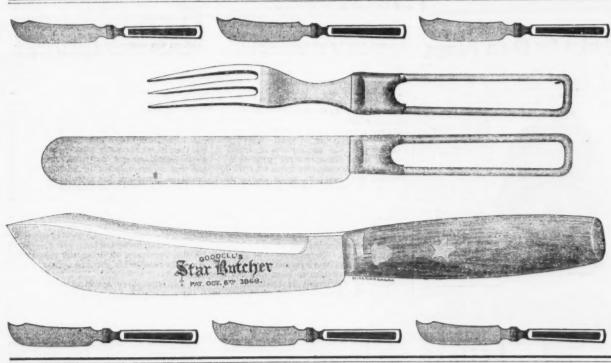
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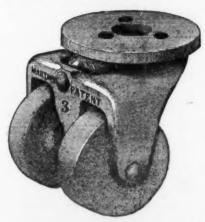
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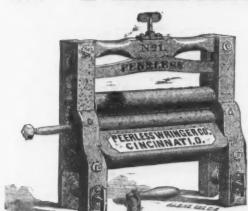
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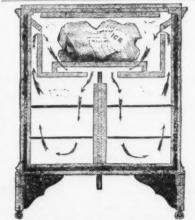
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Iron, 3-4 x 2 in., 5-8 x 3, 1-2 x 4, and 1 inch round, smoothly, leaving good ends; weight, 375 lbs.; reduced price, \$65, net. Also, smaller sizes.

These are the most powerful Bar-Iron Shears for Blacksmith work ever invented, while in price they are below any shear of equal capacity in the market. PEERLESS PUNCH AND SHEAR CO. 0 New York.

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is there specifically pointed out; and though the lawmaker may not have used the same name as the maker or importer of the arti-cle, if in the law the article is clearly in-cluded in any name as subject to a particular duty, that duty will be charged upon it. The Tariff Act is concise in its mention of steel, and fixes duties in the particular and in the general. The particular duties needed to be here named are only these:

I. Steel in ingots, bars, coils, sheets,

* * * * valued at 7 cents per pound
or less, 2 cents and ¼ per pound * *

* * * (Tariff Act as indexed § 117.)
It is clear that the steel in this case was not
in sheets or coils. And though the assistant appraiser has classified it as steel in bars, it was not contended in oral argument before me, that it is to be so held. I am informed, also, that the word "bars," in the passage above quoted, has been interpreted to mean the first steel designed for the water of the first steel. above quoted, has been interpreted to mean the finer steel, designed for the making of tools and nicer implements; that better kind of steel being known as bar steel. And it is suggested that that officer so classified, rather by assimilation (under § 2499 Rev. St.), than as matter of fact. Moreover, the Tariff Act recognizes a difference between bar steel and steel railway bars. (Act indexed § 92.) There remains then only the term "ingots," in the above quotation from the Tariff Act. And the stress of the oral argument before me steel railway bars. (Act indexed § 92.) There remains then only the term "ingots," in the above quotation from the Tariff Act. And the stress of the oral argument before me was that steel in the form now designated as "steel blooms" is truly "steel in ingots." Indeed that was stated, in answer to an inquiry made by me, to be the gist of the argument. I have stated above what is an ingot of steel and what is steel in bloom. It seems they are not the same precisely in form, though there is a general likeness therein; and it is plain that an important change has been made in the substance. At least one step has been taken that has improved, if not changed the character of the material. The material is no longer the ingot, which is the first state of the article steel—the crude state, so to speak—but it is in an advanced state wherein by manipulation there has been added value to it, and it has been brought into a condition recognized in the markets as different from the ingots, both in appearance and in quality. The taking of that step has produced an article from the steel (the steel crude, to use that word) that did not exist before that step was taken. Something has been made from steel that has a distinctive and important place in commerce. That steel in this condition was not known by the name of "steel bloom," is not conclusive that it was meant by the Tariff Act. The adoption of such a measure would conclusive that it was meant by the Tariff Act to include it in the term "ingot," as, in the first place, the latter term had then an application, and it is worthy of notice that, though the ingot is applied somtimes to a piece of steel after it has been manipulated to consideration. And it is worthy of notice that, though the ingot is applied somtimes to a piece of steel after it has been manipulated to consider a piece of steel after it has been manipulated to consider a piece of steel after it has been manipulated to consider a piece of steel after it has been manipulated to consider a piece of steel after it treatment that the material has received, as cogged ingots, hammered ingots, rail ingots, or the like, showing thereby that the term "ingots" alone does not convey the full idea of the state of the steel after it has been reheated.

The second section provides that the Sections as relates to bringing suits for the recovery of duties alleged to have been erroneously or illegally exacted is repealed.

The second section provides that the Sections as relates to bringing suits for the recovery of duties alleged to have been erroneously or illegally exacted is repealed.

by the treatment above set forth.

2. I find, too, in the Tariff Act, that provision is made for "steel in any form, not otherwise provided for." (Act indexed \$\frac{1}{2}\$ section 3 provides that every appellant to otherwise provided for." (Act indexed \$\frac{1}{2}\$ section 3 provides that every appellant to the Court of Claims shall enter his appeal in said court within thirty days after the taking the meaning of "any kind or description." I have shown, I think, that steel blooms are not the same description of steel as ingots, and I might then inquire whether they would not fall within the last-quoted clause. But as no one strenuously contends for that, and the decisions of this department have not gone that way, I will department have not gone that way, I will
Section 4 provides that the Attorney-Genform no opinion, nor intimate any therein. form no opinion, nor intimate any therein. Besides, those decisions were made upon the question directly presented to some of my predecessors, that this article fell under that clause. If it had been held that it did, the duty to be exacted would be lower than any that has been imposed. But it was held that it did not, and a higher duty than that prescribed by that clause was collected. For me now to reverse that holding, and to rule that this article fell under that clause might be to make a reversing decision adverse to the Government, and, as I understand, I am forbidden by statute to do that, except in the

merce and statutory law, and may be used; and I must conclude that when it is coupled with the word "steel," it is used to carry from mind to mind the notion of steel in some stage of manipulation of it for the ultimate practical use of mankind. Now, what is the notion thus conveyed? As I gather it from the assertions and concessions made in the argument before me, and from statements drawn from men engaged in the working of ores and metals, it is this: The first form of steel, as it comes from the mold or jacket, is that of a large lump or a line of the completed state. There is more to be done to it to produce an article that will in its final shape enter into properly said, however, to be in a shape that is a making of an article composed of steel.

(See act indexed § 91.) There has been considered.

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BOLIDERY St., New York

These shoes are forged from a solid bar of steel. Afford a natural, even bearing for the foot. They will cure corns and improve tender feet. Being a finished shoe it only requires the work of shaping and nailing on.

Send for sample keg (100 lbs.) assorted sizes.

Setatements drawn from men engaged in the working of ores and metals, it is this: The first form men engaged in the working of ores and metals, it is this: The first form of steel, as it comes from the mold or jacket, is that of a large lump or block, and it is then known and described as an ingot, which, being reheated, is divided into parts, which are put under pressure or the blows of hammers, whereby their structure is somewhat echanged, in that they are compacted, lengthened in texture and strengthened. The idea of the material in that changed state is now conveyed, when it is spoken of as a "steel bloom," so that it may be taken for the purpose of this decision that a "steel bloom" is a piece of steel, not in its first state, but changed and improved therefrom, in the second of the produced, and that, therefore, the action at the Appraiser's Office, at the port of New York, was mistaken, and that the appeal should be sustained. I am not so entirely learn to entirely the metal from what may be called its raw condition to one for immediate use for smpurpose of mankind.

The raticles brought in by the appellants and though fixed by that act upon that article. It maters not by what name the article is brought fixed by that act upon that article. It maters not by what name the article is brought in the fair purview of that act it is the respectively in the fair purview of that act it is there specifically pointed out; and that the produced, and that, therefore, the action at the original produced, and that, therefore, the action at the control of the produced is marking of an article compendent of the produced from the somewhat varying to the produced in the produced from the produced from the pro been in accordance therewith and no amendment of the Tariff Act in contradiction of that action has been made, I will adhere thereto. Accordingly the officials at New York will be directed to exact duties at that rate upon the goods of the appellants involved in this case. To prevent misapprehension, I will speak of a former decision of this department akin to that now made. I mean S. S. 4999. As to change the rule there laid down to accord with my view of the general subject would be to make a ruling adverse to the Government, from which I am precluded by positive provision of law, as above stated, that decision must be still followed as a guide by customs officers. It may not be easy to customs officers. It may not be easy to apply these rulings, in the cases that now exist, or that will arise, so as to make them harmonize, but it is to be expected that the attention of Congress will be given to this subject, the sooner and the more earnestly from the evidence that is now given of the practical difficulties that have arisen in administering the law under varying conditions of fact.

CHAS. J. FOLGER,

Secretary, &c. DISPUTES IN CUSTOMS REVENUE CASES. Senator Sherman has intimated that he will press his bill to facilitate the decision of controverted questions in customs revenue cases, now in the hands of the Finance Committee, for early consideration. In view of this inpracticable, complicated and absurd proposition, the Board of Trade of Philadel-phia, through Representative O'Neill, has sub-mitted to the House of Representatives a

tion. And it is worthy of notice that, though the ingot is applied somtimes to a piece of steel after it has been manipulated to some extent, as above stated, it is generally found in company, in the application, with some word that is expressive of the disposed of as suits against the United States;

The second section provides that the Secthe state of the steel after it has been reneated in the ingot and submitted to pressure, or to hammering. Therefore, I do not think that it was meant by the word "ingot" in the act to describe steel in the state in which it is left by the treatment above set forth.

I find to give the Traiff Act that pro-

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One Screw Planer, 70 in. x 11 ft.
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Woodward Pumps, all sizes.
Two Lathes, 15 in. x 6 ft. New.
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One 17 in. x 5 ft. Lathe. New.
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Up STORE.

One 11 in. x 5 ft. Foot Lathe. New.

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Three Lathes, 22 in. x 12 ft. New.
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One Milling Machine, No. 4. Wood & Light.
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Bros.
One complete set of chains, blocks, castings, &c.. for large Hand Crane.
Also pipe tools, flasks, core barrels. &c.. for making cast-iron pipe, from 4 inches to 30 inches. For further information, apply on the premises, or of either

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A complete set of Machinery for making wrought-fron butts, table hinges and back flaps. This is a rare opportunity for a party with small capital to get into an active business. Address, with real name and references,

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For Sale.

The Tyler Hoe and Tool Works, located at Ironton, Lawrence County, Ohio. This properly is well adapted for manufacturing hoes, picks, mattocks, &c.; is in good repair, and can be started immediately. Iron, steel and fuel of best quality can be obtained at a minimum cost. Shioping facilities, both rail and water, are unexcelled. Will be sold at a reasonable figure and upon easy terms. Address B. M. CALDWELL, Secretary, Ironton, Ohio.

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Wanted.

A competent Man to take entire charge of Hoop Mill; two eight-inch trains and billet train.

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A thoroughly competent, experienced man, one that understands the mixture of irons and the management of men. as Foreman of an old established Car Wheel Works in New York State, None others need apply. Compensation liberal. Address.

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A Partner in a Foundry and Machine Business established in 1824. For particulars, inquire of I. H. COLLER,

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Wanted.

Power Shear for cutting up bar iron scrap, large and small. Also small Power Punching Press Also a good Iron Planer. Give weights, dimer sions and prices.

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WANTED.—A young man wants a situation as Clerk in a first-class Hardware house. Ten years' experience in the general bardware busi-ness, Best of references. Address P. O. BOX 95, Lykens, Pa.

DRILL PRESS FOR SALE.—A new Upright Power Drill Press, awings at Inches, back geared, quick return motion, steel standle and shaff, superior finish; weight, see highly feet, price, 8208, PERLESS PUNCH AND SHEAR CO. 11 W. Liberty St., New York.

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New.
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Six Engine Lathes, 16 in. x 6 ft. Flather's. New.
One Engine Lathes, 18 in. x 6 ft. Flather's. New.
One Engine Lathes, 13 in. x 6 ft. Star Fo. Co. New.
One Engine Lathes, 13 in. x 6 ft. Star New.
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Two Engine Lathes, 13 in. x 15 ft.
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One 20 in. Upright Drill. Prentice. New.
One 20 in. Upright Drill. Prentice. New.
One 20 in. Upright Drill. Ridd. Good order.
One No. 3 Garvin Hand Miller. New.
One 15 lb. Air Hammer Hotchkins. Good order.
One 20 lb. Steam Hammer. Ferris & Miles.
One 20 lb. Steam Hammer. Ferris & Miles.

Three Cupolas, capacity 20, 35 and 40 tons in 12 E. P. BULLARD, 14 Dey St., New York,

GENERAL EASTERN AGENT FOR

Akron Iron Co.'s Patent Hot Polished Shafting.

Rare Chance! Choice Opportunity! FOR SALE.

My Stores and stock of Hardware, Stoves and Tinware, or will retain stores and sell stock only. Good business; leading store in town; annual sales, \$20,000; one R. R. and another building. Inability to attend to indoor business any longer reason for selling. Address

D. W. BENSLEY,
Springville, N. Y.

Manufacturing Property for Sale.

The Real Estate of the late Foundry and Machine Company of Taunton, Mass. Buildings consist of Foundry, Machine, Erecting and Blacksmith Shops, and covering about 60,000 Square feet of ground. For particulars apply to THE GEORGE PLACE MACHINERY AGENCY, vs. Chambers 8t. New York. 121 Chambers St., New York.

Car Works for Sale.

Present output about five cars daily. Either a personal interview, or full particulars may be obtained, by addressing the owner, X. Y. Z., Office of The Iron Age, 83 Reade St., New York.

For Sale.

Iron Shapers, 7½ inch stroke, adjustable while in motion. Price, \$250 net, f. o. b. Send for photo. Address

NIAGARA STAMPING AND TOOL CO.,

For Sale.

Wholesale Hardware, in a flourishing Western city; trade good; can be largely increased; stock clean and new; good reasons given for selling; \$50,000 to \$75,000 required. To parties wishing to invest, no better opportunity can be offered. Address C. H. R. & CO., Office of The Iron Age, 83 Rende st., New York.

THE PARTNERSHIP

Heretofore existing between Thomas Hamilton and Thomas R. Rainear of the Philadelphia Wire Works have been dissolved by limitation. Thomas Hamilton having purchased the interest of Thos. R. Rainear, the business will be continued by the undersigned at the old stand, 1340 to 1352 Vienna Street. Thanking you for past favors and soliciting a continuance of the same, I remain, respectfully yours.

THOS. HAMILTON.
PHILADELPHIA, Jan. 1, 1882.

Wanted.

A second-hand Rotary or Crocodile Squeezer for Puddle Mill. Name cash price f. o. b. cars, with description. Address

PHŒNIX IRON CO., 410 Walnut St., Philadelphia.

W ANTED.—A gentleman residing in Texas desires to represent one or two manufacturers or jobbers of Builders' Hardware and Mechanics' Tools or general Hardware, on salary or commission. Has had fifteen years' experience in this line of trade, and is well posted also in outlery guns, ammunition, paints, oils and brushes. Good references will be given in New York City or St. Louis. Address LOCK BOX 514, Waco, Texas.

WANTED.—Position as Superintendent or Mill Manager; have had twenty-five years' practical experience; have had twenty-five years' practical experience; have for the last ten years been manager in iron and steel rail mill. merchant bar and guide mill and realroad supplies; will take position in works now running or with parties about to build new works. References given from present position. Address MANAGER, Box Z.

Office of The Iron Age, 83 Reade St., New York,

A THOROUGHLY EXPERIENCED SALES-MAN, fully acquainted with Pig and Manufactured Iron trade, also practical mechanical knowledge of Punns, Engines and Machinery, with extensive acquaintance with best trade in Middle and Western States, is open for engagement with dirst-class Commission or Manufacturing House, on good salary or paying commissions. Address, with name and particulars,

"EXPERIENCE," Box 50,
Office of The Iron Age, 83 Reade St., New York.

I ARDWARE.—Wanted, a first class manufac-turing concern to represent in Chicago and the West: am thoroughly posted; big trade; good salesman: plenty of ambition. Refers to Wm. Blair & Co. and Chicago Stamping Co., my old employers. A. GUSTORFF, Room 11. 163 Washington St., Chicago, Ill.

Special Notices.

For Sale.

A Valuable Iron Property,

POMEROY IRON WORKS

Located at the junction of the Housatonic and Boston and Albany Railroads, in West Stockbridge, Moss. Tracks from each road into the furnace yard. This is the only Anthractic Furnace in New England. Product finds sale to the local trade; make about sco tons per year. Reputation of the Iron first-class. The quality of the Ores of the vicinity second to none. Daily shipments are made from the town to the Hudson River Furnaces at Troy and Hudson Furnace fully equipped with Tools. A small outlay will put the Furnace in blast. The Ore Rights and Lime Quarry (the latter on the premises), with the Tools, 48 acres of Land, Tenant Houses and Barns will be included in the sale. For terms apply to WM. TURNBULL,

Trustee of the late Theo. Pomeroy's Estate,
57 and 59 Worth St.,
For further particulars, address or call on
W. M. KNIFFIN,
On the premises.

FOR SALE OR TO RENT.

New, light Factory; 70,000 floor feet; 275 H. P. Corliss Engine, giving power at minimum

Shafting, piping, elevator, &c., all complete and modern. Lowest insurance rates. Railroad siding and ample yard room. Immediate posses-

A large quantity of General and Special Machinery at low prices. SHARPE RIFLE COMPANY,

Bridgeport, Conn. For Sale.

A Manufactory complete; orders constantly ahead; thoroughly established; goods having the highest reputation and staple; business can be increased; net profits, \$\frac{1}{5}\times_{1000}\times_{100}\times_{100}\times_{100}\times_{100}\times_{100}

For Sale.

A complete manufactory, with a business of over thirty years' standing, in Agricultural Tools of high reputation, well-known to the hardware and export trade in the United States. Parties wishing to invest about \$50,000 in a very substantial and reliable business, will have every opportunity to investigate this by addressing AGRICULTURAL TOOLS, Office of The Iron Age, \$3 Reade St. New York.

For Sale.

The largest stock of New and Second-hand Engines, Boilers, and general Machinery in the West. Send for Catalogue. Hoisting Outfits for Coal Mining and other purposes a specialty.

WARREN SPRINGER,

195 to 219 South Canal St., Chicago. For Sale.

Horizontal Engines, 18 x 30 inch, slide valve; also 16 x 42 (Hewes & Phillips), with cut-off; 16 x 36 (Currier, with cut-off; 76 x 28 Upright Engine, with cut-off; one 8. H. P. Locomotive Boller; one 4-ton "Otis" Freight Elevator; No. 5 Knowles Steam Pump. All the above guaranteed complete and in perfect order. For particulars address

BELCHER & BAGNALL,

40 Cortlandt 5t., N, Y.

For Sale.

STEEL RAILS—IN STORE.

1000 Tons 40 lb. "Guests,"

1000 Tons 411/4 lb. "Rhymney,"

with Steel Fish Plates to match the 41% 1 Rails Iron and Steel Rails of any section, for delivery in the United States, or f. o. b. English ports.

WM. LAWRENCE STROUD,

104 John street, New York.

For Sale.

For Sale.

Stock of hardware, stoves and implements, and tore furniture, in one of the best towns in Kansas. HARDWARE. Address

Box 366, Salina, Kansas

LARGE ENGINE LATHES FOR SALE.

One Lathe, 12 ft. bed, 24 in. swing, screw cutting triple gear, compound rest, with cross-feed. One Lathe, 20 ft. bed, 55 in. swing, back gear compound rest, cross and angular feed. One Lathe, 10 ft. bed, 55 in. swing, back geared. These Tools are in use, and can be seen at our factory.
THE STILES & PARKER PRESS CO.,
Middletown, Conn.

THE NEW ENGLAND

Manufacturers & Mechanics' Institute will hold their Second Annual Exhibition at Boston, in their specially constructed Exhibition Building, the largest in the United States, during SEPTEMBER AND OCTOBER, 1882.

Exhibitors invited from the whole world. Blank forms of applications for space sent upon application to JOHN F. WOOD, Treasurer,

38 Hawley Street, Boston, Mass.

A Rare Chance for a Manufacturer. To lease for a term of years, at Mitton-on-the-Hodson, a good Water-rower, with Buildings, which have been used as a Foundry and Machine shop very successfully. Five minutes from the steamboat landing. Address JOHN B BALL, Milton, Ulster Co., N. Y., or HENRY DICKINSON. 243 Broadway, New York.

Special Notices.

SECOND-HAND AND NEW

Machinery. MARCH 1, 1882.

MARCH 1, 1852.

The following new and improved Machinists Tools are part of what we have for early delivery: 2 30 in. x 30 in. x 8ft. Planers. New. March. 2 20 in. x 20 in. x 5ft. Planers. New. March. 2 30 in. x 20 in. x 6ft. Planers. New. March. 2 30 in. x 20 in. x 6ft. Planers. New. March. 2 30 in. x 20 in. x 6ft. Planers. New. March. 2 30 in. x 20 in. x 6ft. Planers. New. March. 2 30 in. swing, 13/2 ft. bed. Engine Lathes. February. 3 18 in. swing, 5ft. bed. Engine Lathes. February. 2 30 in. swing, 15ft. bed. Engine Lathes. February. 2 10 in. swing, 5ft. bed. Engine Lathe. New. 1 10 in. swing, 5ft. bed. Engine Lathe. New. 2 10 in. swing, 6ft. bed. Engine Lathe. New. 2 10 in. swing, 6ft. bed. Engine Lathe. New. 1 18 in. swing, 6ft. bed. Engine Lathe. New. 1 18 in. swing, 6ft. bed. Engine Lathe. New. 1 17 in. swing, 6ft. bed. Engine Lathe. New. 1 17 in. swing, 6ft. bed. Engine Lathe. New. 1 17 in. swing, 6ft. bed. Engine Lathe. New. 1 17 in. swing, 6ft. bed. Engine Lathe. Ad hand. 1 17 in. swing, 6ft. bed. Engine Lathe. 2d hand. 1 12 in. swing, 16ft. bed. Engine Lathe. 2d hand. 1 12 in. swing, 6ft. bed. Engine Lathe. Ad hand. 1 12 in. swing, 6ft. bed. Engine Lathe. Ad hand. 1 12 in. swing, 6ft. bed. Hand Lathe. New. 1 10 in. swing, 4½ ft. bed. Hand Lathe. New. 1 20 in. Upright Drill. New. 1 20 in. Upright Drill. New. 1 20 in. Upright Drill. New. 2 12 in. swing, 6ft. bed. Hand Lathe. New. 1 20 in. Upright Drill. New. 2 10 in. Swing Addia Drill'. New. 2 10 in. Upright Drill. Newly 2 in. Spaner. New. Hand or Power. 2 in. Shaper. New. Hand. Selers' Mulling Machine. 2d hand. 1 Face Milling Machine. 2d hand. 1 Power Punching Presse.

The George Place Machinery Agency, 121 Chambers and 103 Reade Sts., New York.

Bolt and Nut Machinery, &c., for Sale, One-Header Lewis Oliver & Phillips, secondhand. Two-Header Burdick Forged Headers, secondand. Two-Header Lowell Forged Headers, second-

Two-Header Lowell Forged Headers, secondhand.
One Cold Upsetter or Header, Chapin make,
second hand. Will head 6-in. long by % open dies.
Two Key-Seat Cutters, most improved style,
second-hand.
One Double-Punch and Shears. Allstatter No. 7,
second-hand.
One Thorn & De Haven Drill, second-hand.
One Double-Bolt Cutter, Smith maker, little used.
Also our full line of National Machinery Co.'s
manufactures: Hot-pressed and Hot-forged Nut
Machines; Bolt Cutters, National Head, 8 sizes;
Double-Bolt Cutters, Tappers, Headers, Washers.
Rivet, Track Bolt, Pointers, Burrers, and full outfits for Bolt and Nut manufacturers, Address
NATIONAL MACHINERY CO., Cleveland, Ohio,
the only Specialists in the United States.

DESIRABLE MANUFACTURING SITE For Sale or Rent.

Being the extensive property formerly occupied by the BUFFALO IRON AND NAIL WORKS AT BLACK ROCK, IN THIS CITY.

ROCK, IN THIS CITY.

The buildings cover over three acres, and are of brick and wood, substantially constructed, and with slate roofs. They could easily be changed, if necessary, to suit almost any kind of business.

Water and railroad communication to all parts of the country.

Maps of the property, with full description, sent on application. Maps of the property, with run.

Maps of the property, with run.

on application.

P. P. PRATT or F. L. PRATT,
Buffalo, N. Y.

For Sale.

A Valuable Charcoal Iron Property. The Industrial Works of Shamokin, cwned and successfully carried on for a number of years by the late Win. Brown, deceased, consisting of Foundry and Machine Shop, and a large steek of Patterns regarded as part of the property. Boller Shop, Blacksmith Shep and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. The works are now running, but in a very short time possession can be given. Easy terms of payment are offered to suit a purchaser of limited capital.

Offered for sale by WM. McILVAIN & SONS, Reading, Pa.

A Valuable Charcoal Iron Property. Located on the James River, in files south of the Chesapeake & Ohio R. R. at Williamses, known as the SALISBURY FURNACE, on the Richmond & Allegheny actions of sacross of land. At the furnace there is a salitroad Station, a Post office and Telegraph Station. The property is composed of 3000 acres of land. At the furnace there is a salitroad Station, a Post office and Telegraph Station. The property is composed of 3000 acres of land. At the furnace there is a salitroad Station, a Post office and Federal works and at which place there is a Railroad Station, a Post office and Federal works and the country round about, aiso a stable, blacksmith and wagon shop. The ore is taken from a tunnel in the mountain in tramway cars and dumped into a function of the mountain the country round about, aiso a stable, blacksmith and wagon shop. The ore is taken from a tunnel in the mountain in tramway cars and dumped into a function of the country round about, aiso a stable, blacksmith and wagon shop. The ore is taken from a tunnel in the mountain in tramway cars and dumped into a function of the mountain the property will be sold on easy terms.

Apply to EUGENE KELLY, Jan. 7, 1882.

For Sale.

One Beam Engine, 25 x 48, in first-class condition in every respect, patent cut-off. Shive gover-nor, exhaust pipe heater, 18-feet fly wheel, &c., all complete. Price \$1200; easy terms. StilMER & CO., 250 South 3d st., Philadelphia.

For Sale.

Two hundred tons clean new Scale from forge olls and squeezer, where scrap and muck bar is

COBB'S IRON AND NAIL CO., Aurora, Indiana.

For Sale.

A Hardware Manufactory, at Westville, Conn., consisting of Foundry, Machine Shop, Storehouse and other buildings; also Water Power, Engine, Boiler, Patterns, Tools and Machinery used in the same. Address

THE BLAKE HARDWARE CO,
New Haven, Conn.

PUNCHING PRESS AND SHEAR FOR SALE.—A Boilermaker's Funching Saichine, 24 theh throat, punching 4, hole in \$\frac{3}{2}\$, from. Also a Fower Shear, will shear \$\frac{4}{2}\$ plate-from \$\frac{4}{2}\$ flends in width. Weight of each about \$\scale{2}\$ con the solution of the same foundation.

LOR SALE.—Hardware store, located in one of

POR SALE.—Hardware store, located in one of the most thriving cities in Kansas. Will sell half or whole interest in the bushess. Reason for selling, owner cannot give his attention to it. Address

L. A. MELLEN, Kansas City, Mo.

Special Notices.

JOB LOT. **ELEY BROTHERS'**

GENUINE BLUE CARTRIDGE CASES.

Twelve Gauge. The best paper shell in the market. For sale

cheap. Supply limited. ALFRED FIELD & CO.,

93 Chambers St., N. Y.

E. BISSELL & CO.,

Wholesale Hardware Auctioneers. 83 Chambers and 65 Reade Sts., N. Y. Sales held weekly for the trade. Consignments solicited. We refer to the leading Manutacturers and importers.

ROBERT R. HAYDOCK & CO., Auctioneers & Commission
Merchants,
No. 75 Murray Street, New York,
Solicit consignments of
Hardware, Cut'ery, Stamped Tinware, Woodenware, Housefurnishing Goods, &c., for Sale by Auction.
Terms and further information may be had by
addressing P. O. Box 1:69.

A well-established Hardware business, Stock, Fixtures and Good Will, located in Northern New York, on the line of D. and H. C. Co. Railroad. Business of twenty years' standing. Addi HARDWARE TRADE, Address

For Sale.

Office of The Iron Age, 83 Reade St., New York.

For Sale. Two Corliss Condensing Beam Engines,

32 in. x 72 in. cylinders. Address, THE HARTFORD ENGINEERING CO., Hartford, Conn.

For Sale.

The one-story building, about 100 x 170, with twostory brick building adjoining, about 30 x 100, with
water wheel and sharting; also a vacant Lot,
100 x 200, adjoining, with water-power privilege.
Water supplied by the Cohoes Company, located
in the City of Cohoes, N. Y. and occupied by
A. G. Peck & Co. as an ax factory. Apply to
MORRISON & COLWELL,
Troy, N. Y.

For Sale.

One 20-inch Engme, one 100-horse Locomotive Boiler; two large Pulleys, 30-inch face; a 20-inch Rubber Belt, &c. All in good order, and will be sold for less than value to make room for larger. Can be seen running at AKRON RUBBER WORKS, Akron, Ohio.

For Sale.

From 750 to 1000 acres of coal land, with two
5-foot coal seams and all the minerals of Eastern
Ohio and Western Pennsylvania; has good iron
or steel manufacturing site, with railroad and Ohio
River frontage. Inquire for printed circular of
JNO. C. COUCH, Real Estate Agent,
129 Fifth avenue, Pittaburgh.

FOR SALE LOW.—ENGINE.

A Vertical High-Pressure Steam Engine, com plete. Cylinder, 24 in. by 48 in. Built by A. J.. Sweeney & Son. Can be seen in daily use at our

nail factory.

LA BELLE IRON WORKS, Wheeling, West Va.

For Sale. Hardware Stock and Business of twenty years" standing, in a live manufacturing railroad town in Ohio. Stock about \$25,000. A rare opportunity.

For particulars, inquire of T. B. RAYL & CO.,

Detroit, Mich. Presses for Sale.

Three small Power Punching Presses, in firstclass order. They have heavy fly-wheels; two are 13 in. diam., and one 16 in. Price \$75 each (cost-

> PEERLESS PUNCH AND SHEAR Co. 115 W. Liberty St., New York.

For Sale.

Return Flue Boiler, 23 ft. 3 in. long, 41 in. diameter. Flue 16 in. diameter. Used a few months Price \$200, f. 0. b.

HAUCK & COMSTOCK. Mechanicsburg, Pa.

A first-class Retail Hardware Store, doing a good business and located near New York City, for sale on moderate terms. A party desiring to acquire a business could be employed for some time in order to get acquainted with the place.

Address
P. O. Box 892, New York.

For Sale.

P. O. Box 892, New York.

TOR SALE—Two of Munson Brothers' Patent.
Double-Geared Under-Running GRIST MILLS,
Esopas stones, 42 in. diameter, counter shafts and
pulleys, together with an extra set of stones; castiron cases; all complete and new; best drist Mill
made. Maker's price at factory, \$1200. Will deitiver all free on cars for \$850. Large Upright Return Tubular Boiler, 120 H. P., nearly new. Cost
\$2200; price \$800. Also injector, steam gauge,
water gauge and low water alarm combined,
pump, ron smoke stack, 28 in. diam., 50 rt. high;
circular saws, wood fiber machine, pulleys, shafting, betiring, patent bolt bailing press; all new;
will be sold separately or together; a bargain for
cash. WM. IRWIN, 152 Broadway, New York.

For Sale.

A complete stock of Builders' Hardware and Agricultural Implements, situated in the growing city of BRIDGEFORF, CONN. Clean stock, good trade, good location. On account of poor health will be sold on easy terms. Address communications to

SARGENT & CO.,

New York, N. Y.

New York, N. Y.

MECHANICAL DRAFTSMAN, with over five years' practical experience, desires engagement; steam engines and general machinery. Good references. Certificate from Engineering College. Address # BOX \$4, Office of The Iron Age, \$3 Reade St., New York.

Man

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For sale

Of 27, wi charcoal stands bo reference Addres

Special Notices. To Railroads, Mill Owners and Contractors.

STRUCTURAL IRON WORK FOR SALE.

Having purchased the Ironwork of the Main Centennial Building, situated in Fsirmount Park, Philadelphia, we now offer the same in sections to seit purchasers. These buildings can be sold in widths varying frem 100 to 168 feet, and of any hight, from 40 feet down to 25 feet, and in length from 100 to 200 feet. We have eight Spiral Stairways, in all over 300 steps.

Plans showing how all parts of these buildings may be utilized in railroad depots, &c., have been prepared by Messrs. Wison Bros. & Co., of Philadelphia, civil engineers and architects, and can be seen at the office of Mackintosh, Hemphill & Co., limited, Fort Pitt Foundry. Pittsburgh, Pa., or at the office of the company, at Centennial Building, West Philadelphia.

Wishing to dispose of the above quickly, we are prepared to offer great inducements to purchasers, both as to low price of material and promotness of delivery. Any communications addressed to the CENTENNIAL STRUCTURAL CO., care of Mackintosh, Hemphill & Co., Limited, will receive prompt attention.

Copartnership Dissolution.

NOTICE is hereby given that by the death of the junior partner. Mr. Nathan Anthony, the firm of BRADFORD & AFFEONY is this day dissolved. The affairs of the firm will be settled by the under signed, the sole surviving partner. MARTIN L. BRADFORD.

All communications in record to the affairs of the late firm should be addressed to BRADFORD & ANTHONY, Boston, Mass.

MARTIN I. BRADFORD hereby gives notice that be will continue his business under the name of BRADFORD & ANTHONY."

The estate of the late Nathan Anthon stobe in no way interested in the future business whether con ducted under the name of Bradford & Anthony or

duceed under see hame of bladwide a datessed to cherwise.

All business communications should be addressed to BADFORD & ANTHONY,
BRADFORD & ANTHONY,
JAY Washington St., Boston,
Importers, Manufacturers' Agents and Dealers in Cutlery, Fishing Tackle, Skates.

See advertisement on page 21.

STEEL RAILS. IRON RAILS.

THE SPRINGFIELD IRON COMPANY

are open for orders for IRON AND STEEL RAILS for prompt delivery.

Apply to the Company at Springfield, Illinois

JAMES JOHNSTON, Agent,

30 Dine Street, New York. Copartnership Notice.

Mr. H. Bielefeldt has been admitted a partner in our business from this date.

HAMBURO AND NEW YORK, Jan. 1, 1832. HAMMACHER & DELIUS.

The Sherman Process Co. 9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces, The use of this Process improves the quality of the product, saves fuel and labor, and does not re-quire any change in furnace or manner of working See page 17 of The Iron Age of Oct. 15th, 1877.

DESIGNING

of Rolls for every kind of shape, and iron or steel; alse trains and other mill work; furnishes quick and on reasonable terms.

GUSTAVE LINCKE. Pittsburgh, Pa.

Wanted.

A competent and experienced Blast Furnace Man to take charge of the running of two anthracite furnaces at Port Henry, N. Y. Address, with W. T. FOOTE, Agent, references. Port Henry, Essex County, N. Y.

Salesman Wanted.

By a well-known manufacturing house, a Sales-nan who is familiar with the Southern trade, to sell a line of staple goods on commission. A party preferred already representing one or more first-class manufacturing houses. Address, with refer-ences, Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

Two good Rollers on eight-inch train, for both guide and hoop iron. Steady work guaranteed to good men by the year. Address

P. O. BOX 33. New York City.

Hardware, Cutlery and Machinery To Exchange for a good farm, U. S. A. or Can-

ada. Address, with full particulars,

Care of The Ironmonger,

440 Cannon St , London, E. C., England. Rolling Mill and Shears

For sale very lew. Also Engines and Boilers, Lathes, Drills, &c.

A. G. BROOKS & WINEBRENER,

261 North 3d St., Philadelphia. A YOUNG MAN

Office of The Iron Age, 220 S. 4th St., Phila., Pa., remarked that a single large mercantile Little Pitts. 23 ... Rivets in Bulk.
Block and Carriage Rivets...

Trade Report.

BRITISH IRON AND METAL MARKETS.

[Special Cable Dispatch to The Iron Age.] LONDON, WEDNESDAY, March r, 1882.

Scotch Pig.-During the week past the market has been depressed, but a little better feeling prevails at present and prices are a shade stronger. The restriction of output has been continued for both Scotch and Cleveland Pig. As compared with last week's figures, quotations show but little change, few of the brands being quoted 6d. lower The following are to-day's prices for No. 1: Langloan Carnbroe Glengarnock "Ardrossan.....

/6 per ton. Cleveland Pig.-The market continues ctive and prices are firmer. Transactions during the week have been large. The re striction of production has been continued. We quote as follows, f. o. b. shipping ports: Middlesbro' No. r Foundry

Lighterage from Ardrossan to Glasgow is 2/ @

West Coast Hematites.-The demand ontinues to decline, and prices tend in buyers' favor. We quote mixtures Nos. 1, 2 and 5, f. o. b. shipping ports, 58/@ 60/.

Blooms .- Very little has transpired in the way of sales, and the market remains dull. We quote 7" \times 7", nominally, £5. 10/.

Manufactured Iron.-The demand has fallen off and transactions have been small. Although sales are reported below established rates, no change has as yet been made in quotations. We quote, nominally:

Welsh Bars.

under a declining demand. We quote Ordinary sections, nominally, £6. 5/ @ £7. Iron Rails.-There has been rather more

inquiry during the week, though actual sales have been small. Prices are weak. We shipping port, £5. 5/ @ £5. 10/. Old Rails,-The market has been quie

during the week, with moderate offerings while prices, although showing no materia alteration, are reported as weaker. We quote Old Tees, c. i. f. New York, £4. 5/ and Old D. H.'s, same port, £4. 15/.

Scrap.-Very little business has been done during the week, and prices are weak. quote Heavy Wrought, c. i. f. New York £4. 2/6.

We quote Best Selected, £71.

and prices are weaker. We quote Straits,

spot, £111. 10/, and futures, £113. 5/. prices weaker. We quote :

Spelter .- The market continues quiet and

prices are steady. We quote Ordinary, at shipping port, £16. 17/6 @ £17. Lead .- The market is quiet, with a steady

lemand, and prices are firm. We quote Common English Pig, £14. 12/6.

Freights-Are weaker, although quotations remain unchanged, viz., Glasgow to New York, steam, 15/@ 17/6; Liverpool to New York, steam, 15/ @ 17/6, and Liverpool to Philadelphia, 17/6 @ 20/.

FINANCIAL.

Office of The Iron Age, Wednesday Evening, March 1, 1882.

The bulls and bears have reigned alternately during the week under review in the stock market, prices undergoing rapid transition. The grand bear raid, which was the feature of the previous week, culminated on Thursday (immediately succeeding a close holiday), after excitement had risen almost to the verge of panic. The decline was confessedly the work of large speculators, who also manipulated the money market to suit their purposes. The chief objective points were Louisville and Nashville, Wabash, Houston and Texas, Union Pacific, Missouri Pacific and St. Louis and San Francisco, the decline in which stocks ranged from 7 to 20 %. The incident of the day, however, was the tumble in Richmond and Danville, which suddenly collapsed from 219 to 130, though only two weeks before it sold up to 245. The recovery on Friday and Saturday was rapid, the market meanwhile having completely turned, with the Vanderbilt and Gould specialties and Northern Pacific leading. Considerable purchases were made for of 27, who has had nine years' experience in the fron business, desires a Situation. Had charge of charcoal furnace and forge two years. Understands bookkeeping and correspondence. Best of references from present and former employers.

Address IRON,

Office of The Fore Area as a the St. Phills Parametrical circles and that a given by the st. Phills Parametrical circles this "hurricane in a horse-pond," as somebody was pleased to term it, had no perceptible effect, though it may be

house in good standing has since gone unde on account of alleged "shrinkage in values." From the facts presented the impression is justly drawn that the business interests of the country at large, aside from speculation in produce, are in a sound and prosperous condition. On Tuesday the stock marke was weak and feverish, and to-day, as a rule, it is lower than yesterday. A fall in Jersey Central to 92 per cent, indicates that the gislative bill to increase the capital stock has been repassed at Trenton over the Govrnor's veto.

During the week the monetary situation abroad has decidedly improved. On Thursday the Bank of England reduced its rate of discount to 5 % from 6 %, the Bank of Franco and the Bank of Belgium both drooping to 41/2 %. Sterling exchange is dull, but strong. The posted rates are unchanged, while the actual rates are \$4.85 1/2 @ 3/4 and \$4.893/4 @ \$4.90. The expected supply of commercial bills is not forthcoming, but the scarcity does not warrant gold exports, and it is understood in Wall street that the shipment to-day is much smaller than was before reported.

The money market has been active to

of the country is moving along satisfactorily, making due allowance for the destructive floods in Western rivers, and the condition of the roads through a large section, which are a serious impediment to traffic. The grain speculation is unabated. The price of cash wheat has declined since February 1 some 12 to 14 cents per bushel, yet exporters are unable to ship freely while foreign markets rule so low. Thus it comes about that the predicted heavy export movement that was to follow the cotton and grain speculations fails to be verified.

The official statement of the shipments castward from Chicago of flour, grain and provisions, for the week ended last Saturday. makes a poorer showing than any preceding week of this year.

The public debt statement for the month of February shows a decrease of \$9,783,-511.63. The cash in the treasury is \$253,-617,648, against \$246,025,468 a month ago.

The importations of specie and bullion at this port during the week ending February 24th were \$75,372, consisting of \$35,426 in gold, and \$39,916 in silver, as against a total of \$65,411 for the week ending February 26 last year. The importations since the 1st of quote Welsh, 30 lb and upward, f. o. b. January and since the 1st of August compare as follows with the movement during

the corresponding period		r;
GoldSüver	1882. \$325,483 255,778	1881. \$4,722.78 562,46
Total	\$582,266	\$5 #85,25
Gold	Since A 1881-82. 24.872,774 1,298,953	1880-81. \$73.001.75 3,033,81
Total \$	26,171,737	\$76,035,57

The bank statement shows a decrease in Copper.—The market is quiet, with a the reserves of \$2,505,300. The surplus of moderate business doing. Prices are weak. \$1,072,225 of a week ago is wiped out, and the amount held is reduced to about Tin.—The demand fell off during the week, \$1,433,075 loss than the 25 % required by

The following is an analysis of the bank Tin Plates .- The demand is small and totals of this week compared with that of

	last week :				
		Feb. 13.	Feb. 25.	Com	parisons
	Loans	\$328,059,300	\$325,034,900	Dec !	3,084.40
	Bpecie	59.479,000	55,753,800	Dec.	3.725.98
١	Legal t'd'rs	18,005,000	17,260,700	Dec.	804.30
1	Tot. reserve	77,544,000	73,014,500	Dec.	4,520,50
1	Deposits	305,887,100	#97,790,300	Dec.	8,096,80
ı	Reserve re-				
1	quired	76,471,775	74:447:575		£,024.20
ı	Surplus	1,072,225	*1,413.075		\$,505,30
i	Circulation.	19,975,000	20,060,700	Inc.	91,70
1	* Deficienc	y.			

Government bonds at the close were quoted as follows, the 4's and 414's having

	each declined 1/8 to-day :	
	Bid.	Asked
	U. S. 41/2's 1891 registered	2133
	U. S. 41/2's 1891 coupon 11358	1133
	U. S. 4's 1907 registered	1175
	U. S. 4's 1907 coupon	#185
	U. S. Currency 68 1895	meses.
1	U. B. Currency 6s 1896	-
l	U. S. Currency 65 1897	-
l	U. S. Currency & 1898	** 4
l	U. S. Currency 6s 1899 129	etent.
l	Sixes continued1003/4	TOE
ł	Fives continued	1025
l	In State bonds to-day Louisiana	consol

declined to 65.

MINING STOCKS. The closing quotations for mining stocks

were as follows:		
	Bid.	Asked.
Amie	25	26
Alice	2.80	3.03
Alta Mont	1.60	
Bodie		4.00
Buckeye	2	4.
Bulwer	2.30	2.30
Boulder	2	4
Boston C	23	4/3
Big Pittsburgh	90	99
Bradshaw	36	38
Beauce		1.40
Calaveras	10	12
Caledonia	CO. I	
California	36	40
Climax	30	
Consolidated Imperial	8	9
Consolidated Virginia	7%	
Chrysolite	4.00	4.20
Cent. Ariz	95	****
Cherokee	37	42
Caribou		3.00
Clarence	1.50	1.55
Dahlonega	6	
Durango		40
Durkin	50	****
Findley	15	22
Granville	****	3
Goodshaw		35
Great Eastern	7	8
Green Mountain		****
Gold Str		35
Hukill		65
Horn Silver	13%	343/8
Hibernia	16	17
Hortense	25	
[ron Silver		****
Lacrosse.	23	***

-		
-		
20	L. Chief 98	
22		33
77		70
	Mar. Pret 60	
S	Moose 1.05	8 + 5 +
f	Miner Boy 8	1.135
	Navajo	40
n	North Stan 25	
8	Nor. Belle	
	Ori, and Mil 21	2 1
4	Plumas 17	25
	Quicks'r	
9	Rappah'k	35
y	Robinson 3 Gn	3.05
	R. Sun 40	
e	Standard	
2	S. Chit 2.05	9.75
-	Sutro 74	70
-	Spr'g Va!	4.00
- 1	Stormont	9.5
i	S. B xdie	
n	S. Bulwer 20	
	S. Hiten 13	15
	South Pacific 2.35	8.90
f	St. L. 1 and 4	2,90
	St. L a and 3 6;	67
0	Tip Top 4.03	
)	Tioga	
	Tuegarana	25
	Tuscarora	19
- 1	Unadilla	1.2
3	Vizin3 3.60	* * * *
b		

GENERAL HARDWARE.

We have again to report a fairly active market, with values steady and firm. We have received the following communication:

NEW YORK, February 25, 1882. To the Editor of The Iron Age. - DEAR SIR : The money market has been active to stringent throughout the week, except on Saturday, when the supply on call was plentiful at 3 %. To-day as high as I-16th of 1 % was paid, in addition to 6 % per annum; 6 % is about the rate named for the best paper.

As we have already seen, the general trade of the country is moving along satisfactorily, the country is moving along satisfactorily, and the satisfactorily is satisfactorily. check for compromised amount, and interest to date. Respectfully yours,
RUSSELL & ERWIN Mrg. Co.

ninety days. At the February meeting of the American Ax Makers' Association, held at the Astor House, in this city, the price of Double Bit | 97 Chambers street, are their agents, and Axes was advanced to \$19 @ dozen, to take effect March I.

The manufacturers of Wood Screws held a meeting in Boston to-day, but at the close of business their action, if any, had not transpired.

The regular monthly meetings of the manufacturers of Augers and Bits and Chisels and Drawing Knives were held in this city to-day, when existing prices were confirmed.

the week, but prices continue firm and unchanged at \$3.40 @ \$3.50 per keg, according to quantity.

S. H. & E. J. Moore have issued an illustrated catalogue and price list of their specialities in Barn Door Hangers and Rail Anti-Friction Sliding Door Sheaves, Sash Pulleys and kindred goods. Their discounts are as follows :

DISCOUNTS TO PRICE LIST OF " CLIMAX " DOOR HANGERS, ETC., FEBBUARY 15, 1832.

Dis. per con-
"Climax" Barn Door Hangers for Wood Track,
Moore's Wood Track Hangers
"Acme "Barn Door Rollers
Barn Door Stay Rollers
Double Flance Rarn Door Rail Proceft Not Sac
Double Flange Barn Door Rail, Pr 100 ft., Net. \$2.0
Parlor Door Rail, Iron Painted, " " " 3.0
Sliding Door Sheaves, Moore's Anti-Friction
Parlor Door Hangers
Dumb Waiter Pulleys
Sash Putleys
Beggage Car Door Hangers
Railroad Hangers
Moore's Freight Car Door Rollers
" " Hangersne
Moore's Anti-Friction Door Roller, 13-inch
wheel
Moore's Anti-Friction Hay Fork Pulley
Common Hay Fork Pulleys
Tackle Blocks, Norcross Patent, send for special
I MUNIC DIGUNS, MULCIUSS LAUGHT, SCHOLLOI SPECIAL

S. H. & E. Y. MOORE,

163 and 165 Lake street, Chicago. Attention is requested to the advertisement of the American Machine Company, on page 34. The company claim to turn out a greater variety of Freezers than any conspecial claims to excellence. In a circular and mar the work." Six sizes are made, the cern in the United States, and in some make they say: "The Star Ice-Cream Freezer, double action, is recommended with confice as equal to the best Freezers in the market, with some meritorious advantages not found in others, prominent among which we mention: The tub is made strong and of

Sargent & Co. have issued the following discounts to apply to some new pages that they have issued ready for pasting in their

1	1300 Catalogue									
1	Page in 1885	100								
1	Catalogue,	L	11	Я,]	D	61	. 4	C	21
1	30 B. Inside Shutter Hinges		٠.							
1	B Acorn Tip Blind Hinges						.1		19	3
1	- A R CORE SOCKELS									0.8
Į	100 A. Mortise Front Door Bolts									
ı	164 A. Levers for Sargent's Door Bei	ls			ĺ.					
1	250 A. Druggists' Drawer Pulls									
١	250 A, Druggista Drawer & district									
	400 B, Line Cleats					,				
1	430 A, Ham Hooks		* 1	-		4				
1	Sign Hooks		,	×				*		
1	452 A, B, Cotton Hooks				٠	٠				
	New 475, Scale Beams		60							
	476 B. Paper Files and Clips		à					ń	0	Ø.
	183 B. Double Bootjacks	2. 0	,							
	406 A Magnetic Tack Hammers							Æ		
	500 A. B. Match Safes									
	516 B. Table Leaf Supports									
	New 752 B, Reiher's Transom Lifter.							2		di
	New 786 A, German Halter Chain.									
	New 786 B. German Coil Chain									
	New 786 B, German Con Chain	0	0 .						٠,	9.
	788, Black and Tinned Rivets		0.1			0				3

Mallory, Wheeler & Co., New Haven, Conn., announce that they have in press a complete illustrated and descriptive catalogue of all the goods they manufacture, which will be ready for distribution in

Penfield Block Co., Lockport, N. Y., are now prepared to furnish a 1200-pound size of Moore's Hand Hoist. They quote this size \$30 each, subject to discount 10 per sent. Henry B. Newhall, No. 105 Chambers street, is their agent.

Peck & Goddard, No. 60 Liberty street, have been appointed sole agents for the sale of Dunning Patent Steel Horse Shoes, manufactured by the Chicago Steel Horse Shoe Co. of Chicago, Ill. Their territory is confined to the Eastern and Middle States, including Virginia and Maryland. These Shoes are forged from first quality Bessemer Steel, and it is claimed for them that they combine lightness with durability. In their advertisement on page 23 an illustration of this. Horse Shoe will be found, to which we invite attention. A full assortment of these goods will be kept in stock at their warehouse above named.

The Auburn Mfg. Co., Auburn, N. Y., manufacturers of steel goods, have issued a very handsomely illustrated catalogue and price list of their specialties. Their large assortment of Hay, Manure, Spading Forks and kindred goods are shown in as near the natural colors of the steel, wood and labels as it is possible, and the same is true of the large line of Scythes, Hay Knives, Grass The works of the National Horse Nail Hooks, Hoes, Rakes, Scythe Snaths, &c. Company, recently destroyed by fire, are Introducing the catalogue, they say: "It about being rebuilt on the old site, at has been our aim in the issue of this edition Vergennes, Vt. Durrie & McCarty, their of our catalogue and price list to so classify, agents, announce that they will be in the number and illustrate our productions as to maket with the Champlain Nails within facilitate the process of making intelligible orders and specifications, and, in so far as we have succeeded, we believe our efforts will be appreciated." Durrie & McCarty,

carry in stock an assortment of their goods. Durrie & McCarty have issued an illustrated pamphlet showing the line of Pennsylvania and Quaker City Lawn Mowers and kindred goods for which they are agents. We invite attention to the advertisement of Pennsylvania Lawn Mower on page 29, where an illustration of the machine will be found.

The Kilbourne & Jacobs Mfg. Co., Columbus, Ohio, in their 1882 catalogue present Business in Nails has been quiet during illustrations of the "Columbus" Solid Steel Scrapers, with and without runners, Road or Grading Plows, Surface Grader, Road Leveler and a very good assortment of Wheel Barrows with Jacobs's Patent Wheel.

Gay & Parsons, Augusta, Me., in their adortisement on page 31 present a very good illustration of a double action Ratchet Screw Driver, manufactured by them. In a circular describing the tool they say: combines greater strength, convenience and durability than was ever obtained in a common driver. The increase of strength is obtained by having the strain come upon the teeth of a steel ratchet, which is inserted into the largest part of the handle and strongly supported. The diameter of this ratchet is larger than the diameter of the wood at the ferrule, which is the weakest point in a common driver. This invention gives us steel in place of wood for increased strength. The action is very direct and simple, and will last a lifetime. Simply sliding the button from one side of the plate to the other throws one pawl out and lets another into the teeth of the ratchet, changing from a right to a left hand action instantly; or, by leaving the button midway, the blade remains stationary, like a common driver. This direct action of the Ratchet allows the pressure to be retained against the screw as firmly while turning the hand back as when turning the serew ahead. Retaining the pressure continuously, of course, enables one to carry the hand much steadier, and the blade is far less liable to slip out of the slot list prices of which are as follows:

\$9 00 10.20 12 00 13 50 15 00 16.50 per doz. The regular discount from the above list

is 35 per cent. Reed & Co., manufacturers of hardward specialties, Higganum, Conn., have placed best quality cedar, bound with galvanized on the market a new Wrench which they iron hoops. The gearing is completely covered, so that nothing can get between the and which is illustrated in their advertisecogs. The can can be revolved to harden ment on page 12. It is made of Malleable cream after the stirrer has been removed. Iron, and, as shown in the cut, is provided The cross-bar is arranged to give the great- with a flange, which acts as a rest, so that est facility for packing ice. The can and when in use it can be placed on the floor or stirrer both revolve, but in opposite directions. The scraper is self-adjusting. The made, No. 1, which will take Nuts 1/4workmanship and material are of the very inch square, and No. 2, for Nuts 1 1/8 to 2-inch

The following explains itself:

Steniano, Ill., February 3, 1882. I have appointed Messrs. Flagler, Forsyth I have appointed Messrs. Flagter, Forsyta & Bradley, 298 Broadway, my agents f r the sale of McElhaney's Pruning Shears east of Buffalo, and have authorized them to sell at my prices. The price for the same is now \$18 net per dozen pairs.

A. S. Todd.

In an advertisement in another column, T. New, No. 32 John street, invites the attention of the trade to his Prepared Roofing for steep or flat roofs. From a circular describing this Roofing we take the following: "This Prepared Roofing is of first quality, and is composed of: I. A strong foundation in the shape of a layer of best saturated roofing felt; 2. A waterproof layer of vegetable gum; 3. Felt same as first; 4. Vegetable 3314 gum; 5. Felt. All this under heavy pressure is formed into a solid, impermeable

buyers do not come forward in anticipation of future requirements, but are satisfied with a hand-to-mouth policy. The consumption of Pig Iron continues on a large scale, and the deliveries on old contracts are said to be very heavy and sufficient to prevent any accumulation on furnace banks. The tone of the market has lost none of its strength so far as the raw article is concerned, and we repeat former quotations, viz.: Foundry No. the market has lost none of its strength so repeat former quotations, viz.: Foundry No. 1 X, \$26.50 @ \$27; Foundry No. 2 X, \$25; Gray Forge, \$24.

Scotch Pig.-The demand for foreign Iron was light during the week, and prices of some brands are not as firm as of late. Sales are reported of 100 tons Eglinton at \$24. 100 tons Glengarnock, and about 400 tons various brands, in lots, at our quotations. We quote: Eglinton, \$24 @ \$24.50; Carnbroe, \$25; Coltness, \$27 @ \$27.50; Glengarnock, \$25 and Gartsherrie, \$26 @ \$26.50.

Rails .- Nothing in the way of new busi ness in either Steel or Iron Rails has been announced since our last writing, and the tone of the market is more in buyers' favor. Steel Rails are quoted nominally, \$57 @ \$60 at mill, but rumors of lower figures are cur rent, and \$55 is talked of as the probable price at which a desirable order might be placed. Iron Rails are neglected, and we quote them nominally, \$48 @ \$50 at mill.

Old Rails.-We hear of a sale of a small lot of Bridges at \$32.50, and 500 tons Double Heads at \$31.75 f. o. b. cars at Jersey City. The market is void of animation and prices are a shade easier. We quote T's, \$29.50 @ \$30, and D. H., \$31.50.

Scrap.-Wrought Scrap, to arrive, is quoted \$31.50 @ \$32. We have not heard of any transaction worthy of mention.

METALS.

Copper.-Sales for the week have summed up some 200,000 pounds of Lake Copper at 1916 @ 1916 closing firmer at 1916 Baltimore is worth 192. Nothing transpires in futures. The chief mines are not anxious sellers of Copper at anything under 20¢, sellers of Copper at anything under 20¢, whereas manufacturers, still sufficiently stocked, show indifference. London cabled Best Selected £74 yesterday, and Chili Bars £65. We are reported from London per cable to-day: "The market is quiet, with moderate business doing; Best Selected, £71." The import of Copper into the United States has been:

Liss. 1580. Liss. Liss.

Lbs. 789,670 251,890	Lbs. 4.561.364 754.635
537.780	3,805,729
240	1,699
PORT.	
1881. Lbs. 7.034.775	1380. Lbs. 326,252
	Lbs. 789,670 251,890 537,780 240 PORT. 1881. Lbs.

Manufacturers have made no change in prices. They quote: Bottoms, 31¢ @ 32¢; Braziers, 30¢ @ 36¢; Circles, 33¢ @ 36¢; Sheathing, 28¢, and Bolt Copper, 30¢; Segment Sheets, 33¢; Fire-box ditto, 30¢.

Tin .- The market has been quiet and Tin.—The market has been quiet and steady at 25½\$\psi\$ for Straits; Billiton and Australian, 25½\$\psi\$, large lots; English Refined and Common, 25½\$\psi\$, and Banca, 29\$\psi\$. A year ago Straits Tin was worth 19½\$\psi\$; in 18\$\psi\$0, March 1, 22½\$\psi\$; in 1879, 15½\$\psi\$, and in 1878, 14½\$\psi\$. According to Messrs. Wm. I. Russell & Co., 12 Cliff street, New York, the stook at New York and Boston is 1387; tons and there are affoat 2070 tons. constitutions and there are affoat 2070 tons. the stock at New York and Boston is 1387 tons, and there are afloat 2070 tons, constituting a visible supply this day of 3457 tons. London quoted per cable yesterday £111.15/. Straits Tin, Singapore, \$35 % picul, and Penang, \$34.50. Shipments from Singapore to the United States have been 145 tons during the latter part of February, making 420 tons the month. tons for the month. February deli have been 1300 tons in England and Holland jointly, against 1900 in January. Consumption in the United States from January 1 to March 1, 1882, is estimated to have been 1500 tons. The Billiton sale came off yesterday, 13,000 piculs, averaging 77.25 guilders, which is equal to £116, cost and freight in Holland, and 26¢ laid down here. The import of Tin into the United States has been, in hundredweights:

Net import	157,525	258,531
Equal to tons	7,876	12,926
We are reported from Lor The demand fell off draud prices are weaker. We spot, £111. 10/, and futures Piates.—The week has been appointment. We quote at lines, ordinary brands & Bright, \$6.25 @ \$0.50; ditto @ \$5.62/2; Coke Tin, \$5. ditto Ternes, \$5 @ \$5.12/2. a quiet market yesterday a and 21/ Melyn grade Chaport of Tin Plates into the been, in hundredweights:	ring the e quote s, £113.5/. quiet and the close, box, Ch box, Ch Ternes, \$ 20 @ \$5.33 England t 16 for arcoal. T	week Straits, "Tin I a dis- large parcoal 55.37 ½ 5, and cabled Coke, he im

Less re-export.....

Less re-export	1881. 3.660,106 9.707	1880. 3,160,976 8,895
Net import	3,650,339	3,152,081
Equal to tons	London	per cable :

Fabric, which, after being fastened to the fabric, which, after being fastened to the roof, is finished by a coating of Granito Cement and sanded. Thus a good, substantial, yet light and good-looking, roof is obtained, which will last for twenty years, if the same care is taken of it that is given to tin roofs."

IRON.

American Pig.—The tone of the Iron market is quiet along the entire line, and buyers do not come forward in anticipation

Lead.—The market has been quiescent, nothing but a retail trade transpiring at \$5.15 (@ \$5.20 for Common. Refined has been active at 5¼¢, nominally. St. Louis reports by mail, February 25: "Lead opened lower and dull; sales of special brands hard early in the week at \$4.85, and Refined at \$4.70, but a firmer feeling manifested itself later on. To-day seven cars hard, special brand, sold at \$4.90." Since this was written freight from East St. Louis has risen to 35½% I noo lb, equal to 35¢ from St. Louis. Yesterday London cabled cost, freight and insurance, £15. 2/6, which is equal to \$4.30 here. The import of Lead into the United States has been, in pounds: Lead .- The market has been quiescent

into the United States ha	1881.	pounds: 1880, 6,438,032 48,135
Net export	6,907,329	6,395,897
Equal to tons		2,855 r cable :

ufacturers' prices. We quote: Pipe, 7½¢ Sheet, 8¢; Tin-lined Pipe, 15¢, and Block, 35¢; all less 10 % to the trade. Spelter and Zinc .- The Spelter market

has been dull, manufacturers being provided for the time being. Some small lots were meanwhile pressed on the market and sold a trifle under current quotations. We nevertheless quote Common Domestic, 5% φ @ 6φ, Silesian being nominally worth 534 ¢. The latter is still cabled firm from Breslau at figures forbidding its being laid down at New York at anything below 5784. The import

of Spelter into the United In blocks In sheets	1881. Lbs. 5,511,203	1880, Lbs. 6,160,653 4,288,028
Less re-export—	5,187,993 27.611	74,598
Net import	8,160,382	10,374.083
Equal to tons	London p quiet and	prices are

steady. Ordinary, at shipping port, £16. 17/6 @ £17." Sheet Zinc is quiet at 7½¢. Antimony.—We have ascertained that the consumption of this metal is too tons per month in this country, toward which the Sonora Smelting Company, of California, furnished, during 1881, 30 tons monthly. This supply, obtained from Sonora (Mexico) ore, smelted in California, has now fallen

out, and as Antimony smelted from Nevada ore is but a small affair, our supply has to be drawn almost wholly from England. Hence the firmness of the Cookson and other English brands. We quote: Cookson, 15¢ and Hallett, 131/4.

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers

I CHOW MCMMI	.rg @ .10
Brass, heavy	.22 @
Brass, light "	.10% @
Composition, heavy "	.15 @ .16
Lead, heavy	@ .041/2
Ten Lead	@ .04
Zine	.031/2 @ .031/4
Pewter, No. 1	.131/4 @ .14
Pewter, No. 2	.c8 @ .c9
Wrought Iron \$ ton.	24.00 @ 25.00
Light do	12,50 @
Stove Plate	@ 13.00
Machinery do "	@ 17.03
Grate Bars	7.40 @ 8.00
Electrotype plates W D.	.04% @
Stereotype plates "	.05 @
Small type "	.001/2 @ .07
The prices current (prices dealers) for Rags, &c., are as	
dealers) for Rags, &c., are as	follows:
dealers) for Rags, &c., are as Canvas, Linen	follows:
dealers) for Rags, &c., are as Canvas, Linen	follows:
dealers) for Rags, &c., are as Canvas, Linen White Cotton, New No. 2	follows: # D. 3%c. @ 4 c 11 3%c. @ 24c. @
dealers) for Rags, &c., are as Canvas, Linen	follows: # b. 3%c. @ 4 c. 3%c. @ 2%c. @ 4%c. @ 4%c.
dealers) for Rags, &c., are as Canvas, Linen	follows: D. 3½c. @ 4 c. 3½c. @ 4 c. 2½c. @ 4½c. 2½c. @ 4½c. 2½c. @ 2½c.
dealers) for Rags, &c., are as Canvas, Linen	follows: 10 D. 3½c. @ 4 c 3½c. @ 4½c. @ 4½c. @ 4½c. @ 2½c. @ 2½c. @ 1 c. @ 1½c.
dealers) for Rags, &c., are as Canvas, Linen	follows: 1 b. 3½c. @ 4 c 1 3½c. @ 2 ½c. @ 4½c. 2 ½c. @ 4½c. 1 c. @ 1½c. 6 c. @ 10 c
dealers) for Rags, &c., are as Canvas, Linen White Cotton, New No. 2 White, No. 7 No. 2 Seconds Soft Woolens Mixed Kags	follows: \$\mathbb{B}\$ 3\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
dealers) for Rags, &c., are as Canvas, Linen. White Cotton, New. White, No. 1. No. 2. Seconds. Soft Wodens. Mixed Hags. Gunny Begging.	follows: 10.3%c. @ 4 c 13%c. @ 24%c. @ 4%c. @ 4%c. 1 c. @ 1%c. 1 c. @ 1%c. 1 c. @ 1%c. 1 f. @ 4%c.
dealers) for Rags, &c., are as Canvas, Linen. White Cotton, New No. 2 White, No. 7 No. 2 Seconds. Soft Worlens Mixed Rags Gunny Bagging. Jute Butts.	follows: D. 3%c. @ 4 c 3%c. @ 4 c 2%c. @ 4%c. @ 4%c. 2%c. @ 2%c. 2%c. @ 2%c. 1 c. @ 1%c. 2 c. @ 2 c. 3 c. @ 2 c. 3 c. @ 2 c. 4 c. 5 c. @ 2 c. 6 c. @ 2 c. 6 c. @ 2 c. 7 c. @ 2
dealers) for Rags, &c., are as Canvas, Linen. White Cotton, New. White, No. 1 White, No. 2 White, No. 2 Seconds. Soft Woolens Mixed Hags. Gunny Bagging. Jute Butts. Kentucky Bagging	follows: b, 3%c, 6 4 c 3 / 6
dealers) for Rags, &c., are as Canvas, Linen. White Cotton, New No. 2 White, No. 7 No. 2 Seconds. Soft Worlens Mixed Rags Gunny Bagging. Jute Butts.	follows: D. 3%c. @ 4 c 3%c. @ 2%c. @ 4%c. @ 4%c. 2 kc. @ 2 kc. 1 c. @ 1%c. 2 c. @ 10 c 3 c. @ 2 kc. 1 f. @ 4 kc. 1 f. @ 4 kc. 1 f. @ 5 kc. 1 f. @ 6 kc. 2 c. @ 2 kc. 1 f. @ 6 kc. 2 c. @ 2 kc. 3 c. @ 2 kc. 4 c. 5 c. @ 2 kc. 5 c. @ 2 kc. 6 c. @ 2 kc. 6 c. @ 2 kc. 6 c. @ 2 kc. 7 c. @ 2 kc. 6 c. @ 2 kc. 7 c. @ 2 kc. 7 c. @ 2 kc. 8 c. @ 2 kc. 9 c.

FOREIGN TRADE MOVEMENTS.

The following is a summary of foreign trade movements for the past week:

IMPORTS. For the week ending February 25:

Total Prev. reported	1980. \$7,848,977 61,771,929	1881. \$8,907,346 51,343.429	#382. \$11,175,258 65,283,801
Since Jan. 1	\$69,620,800	\$60,250,775	\$76,459,053
Included in merchandise v			rticles of

	Quantity.	Value
Anvils	435	\$4.44
Brass goods	. 38	3,57
Bronzes	. 5	3,38
Chains and Anchors	42	1.81
Liocks		2,01
Copper		3,40
Cutlery	. 189	52,58
Gas fixtures	. 2	1,25
Guns		X1.50
Hardware	. 7	46
Iron, pig, tons	4.070	68,74
Iron, sheet, tons	. 66	5,00
Iron ore, tons	2,515	7.57
Iron, other, tons	3.954	103,27
Machinery	. 270	30.43
Metal goods	. 219	22,98
Nails		40
Needles	. 56	13.63
Nickel	. 3	1,34
Old metal		5,73
Pins	. 2	2/
Platina	. 2	5.95
Plated ware	. I	1
Percussion caps	. 14	2.13
Saddlery	. 12	2,80
Steel	60,104	213.97
Spelter	386,033	15.79
Steel pens	. 3	8,42
Sliverware	5	56
Tin, hoxes	65,245	327.02
Tin, bbls	2.5	1,43
Tin, slabs, 1550	61,700	15.43
Wire	. 30	7.80
Zanc	402,782	17.80

The fe	ollowing	are	the	imports	of	leading
articles.	compare	d wi	th p	revious	date	8:

articles, compar	ed with p	revious di	ites:
Cutlery, pkgs Hardware, pkgs Iron, R. R., bers., Lead, pigs	. 7	8 weeks of 1852. 2.236 195 20.929 3.006	Same time 1881 1,220 250 7,723

Steel, pkgs	60,104	279,469	72,291
Tin, boxes	65,245	409,798	187,777
Tin slabs, lbs	61,709	658,304	3,262,005
EX	PORTS OF S	PECIE.	

-	Total	\$1,709,56
-	Total since January 7, 1882	\$8.792.74
î	San.e wime in 1881	1.902,79
1	Same time in 1880	1,370,50
i	Same time in 1870	3,073,16
î	Same time in 1878	2,151,09
ì	Same time in 1877	2,899.81
Ì	Same time in 1876	7, 988, 28
ð	Same time in 1875,	13,555,80
1	Same time in 1874	5,566,97
ĵ	Same time in 1873	11,235.94
l	Same time in 1872	2,810,36

For the week ended Feb. 28;

Total Prev. reported.	1830. \$5,293,449 42,451,665	1881. \$8 528,255 49,944,040	1882. \$5,965,154 46,288,056	Cra
Since Jan. 1	\$47.745,114	\$58,472,295	\$52,253,210	
	-			1

EXPORTS

Of Hardware, Iron, Machinery, Metals &c., from the Port of New York, for the

	Week ending Febru	ary 28, 1889:
	Hamburg.	Bilbao.
	Quan. Val.	Quan. V
	Sew. ma., cs., 235 \$3.900	Ptlm., gels. 112.329 \$8,4
	Ptlm., gals. 995,820 70,022 Revolvers, Cs. 5 3,642	Argentine Republic
	Blower I 500	Hdw., pkgs 95 5
	Ag. imp., pkgs 870 16,830	Tacks, cs 62 2
	Much'y, pkgs. 31 5,448	Ag. imp.,pkgs 510 11,2
	Clocks, bxs 69 1,370	
	Shears, bxs 45 570	Africa.
	Valves, cs 3 170	Ptlm., gals.315,000 31,5
ı	Mf. iron, pkgs 85 1,272	Cuba.
ł	Knit mach,cs. 25 2,800	20.00.00.00
ł	Hdw., pkus 10 535	Mf. iron, pkgs 58 6
ĺ	Ptg.pres,pkgs 4 600	Nails, kegs 4
ı	Bremen.	l'tlm., gals5160 6
Į		Ag. imp.,pkgs 142 6,4
į	Ptlm., gals.450,300 39,050	Nails, bxs 38 1
1	Mach'y, pkgs. 3 50	Mf. copper,bx 1
	Ag. imp.,pkgs 5 258	R. R. cars 3 4
	Hdw., pkgs 127 854	Mach'y, pkgs. 65 8,70
	Dutch West Indies.	Hdw., pkgs 67 2,7
	Mf. iron, pkgs 4 52	Pumps pkgs. 5
	Ptim., gals2,453 264	Windmls, pgs. 38 8:
ŧ	Hdw, pkgs 3 65	Brake fix.,pgs 2 5
	Buckles, C8 3 217	Bolts, kegs 15
	Dutch East Indies.	French West Indies
	and the second s	
	Ptlm , gals . 463,000 50,950	Ptlm., gals8000 9
	Amsterdam.	United States of Oc
	Sew. ma., cs., 201 2,400	lombia.
	Pumps, pkgs. 7 500	YF.1 1
	Hdw., pkgs 7 180	Hdw., pkgs 229 5.41
	Ag. imp.,pkgs 3 125	Cutlery, cs 33 1,22
	Rotterdam.	Ptlm., gals6230 91 Mach'y, pkgs. 168 4.11

T. C	Les Pre	10	United States of	10
	100	2,400	lombia.	
8.	7	500		
	7	180	Hdw., pkgs 229	5.4
28	3	125	Cutlery, cs 33	1,2
-			Ptlm., gals6250	9
rd	CS 2978		Mach'y, pkgs. 168	4.1
648	148	34,800	Iron safe 1	1
196	25	190	Arms, cs s	1,0
	7	105	Pistols, cs s	4
gs	2	350	Agl, imp,pkgs 33	4
-		7.	Nails, kegs 87	3
100	Last.		Zinc, roll i	-
. 70	,702	5,985	Steel bdls 3	

Central America.

r. gds., cs., ew. ma., cs..

I. r. gds., cse. Venezuela.

Hdw., pkgs... 3 Ptlm., gals ..9675

Mach'y, pkgs.

China.

iges, es ii

Phillipine Islands.

Ptlm., gals 162,290 18,250

Monico. Ag. imp.,pkg8 88 Sew ma., cs.. 48 Cutlery, cs... 2 Arths, cs.... 6

aph., gals. 20,0	25	1,795	Clocks,
Antwer	p.		Zinc, c.
ew. ma., cs.,	73	1,460	Mf. iron
lect, ma., cs.	10	5.025	I. r. gds.
g. imppkgs	15	1.381	Carbine
	20	186	Revolve
ails, bxs	24	108	Tower c
tlm., gals.400,0	og:	32,000	Iron, pk
fd. iron, pgs	23	402	Y. meta
Landon			Pumps,

Longo	20.	
Hdw., pkgs	63	2,211
Sew. ma., cs	171	2,5-0
Ptlm.,gls.1,124,	208	86,200
Guns, cs	20	500
Ag. imppkgs	76	6,423
Pumps, pkgs.	3	182
Bristo	.30	

Mach'y, CS.... 4 125

Ag. imp.,pk Hdw., pkgs. Ptg.pres,pk

Ptlm., gals

T DATES - Menerica - Lota - 1 -	
Clocks, bxs 37	442
Liverpool	
Arms, cs 4	700
Hdw., pkgs., 92	3,903
Elec. apar.,cs. 28	5,500
Mf. iron, page 11	609
Ptim., gals, 339,876	25,491
I r. g'ds cs 11	423
Revolvers, cse 1	480
Clocks, pkgs., 363	9,313
Mach'y, pkgs. 60	4,084
Ag. imp.,pkgs 194	5,730
Sew. ma., cs., 1008	15,384

Revolvers, cse i	480	Clocks, Cs	- 3	
Clocks, pkgs., 363	9,313	Iron safe	X	
Mach'y, pkgs. 60	4,084	Br's. caps, bls	100	1
Ag. imp.,pkgs 194	5,730	Per. caps, cse	1	
	15,384	Tacks, cs	10	
Cutlery, cse I	100	Cartridges, cs	19	
Shears, bxs 20	200	Nails, kegs	170	
Newcastle.		Nails, es Mach'y, pkgs.	33	
Ptlm., gals 90,714	7,257	Pumps, plags.	6	
Gloucester.		Mf. iron, pkgs Shot, sacks	180	
Drim male van and	10.336	Tin, cs	20	

r curri. Percerad	win	40,330
Hull		1
Ptim., gals. 275.	000	25,000
Mf. iron, pkgs	4	153
Ag. imp., pkgs		
Hdw., pkgs	154	2,724
Pumps, pkgs	10	
Clocks, pkgs.	22	561

Glasgo	10.	
Mf. iron, pkgs.	11	353
Cartridges, cse	1	40
Clocks, bxs	63	5,600
Mach'y, pkgs.	7	1,671
Nails, kegs	10	73
Car wheels	5	105
Hdw., pkgs	119	2,300
Sew. ma., cs	225	3.972
Ag. imp.,pkgs	7	472
Firearms, cse.	1	:75
Stettin	2.	

e me a me come a me co	- 6
Stettin.	
Ptim., gals. 165,831	13,00
British North A	
Hdw., pkgs 102	1,71

toun Colonies.
Hdw., pkgs., 102 1,719 Clocks, csc., 1 70 Mach'y, pkgs. 2 82 Ptim., gls., 13000 360 Mf. iron, pkgs 28 176 Pig iron, tons. 174 3,480
British East Indies. Ptlm.gls.1,210,620 126,163
British Columbia.
Mf. iron,pkgs. 100 425 Ptlm., gals., 40,000 7,100
Havre.
Elec mach es. 2 202

g. imp.,pkgs	242 :	12.805
locks, bxs	2	300
Marseil	les.	
im., gals68, locks, bxs ach'y, pkgs.	2	5,036 28 10
ritish West	Inc	ties.
f. iron.pkgs.	2	50
r. gds. pge.	E	50

v., pkgs	4	50	Hayti
imp, pge.	3		Ptlm., gals2,5
h. oil, bbl.	1	22	Revolvers, cs. Mf. iron, pkgs
Barcelo	na.		Nails, kegs Mach'y, pkgs.
, ma., cs.,	2	20	Sew ma, cs
v., pkge	1	100	Hdw., pkgs
s, kegs	10	46	Clocks, bxs
iman nirae	200	200	Naile places

if. iron, pgs. Revolvers, cs. Nails, bxs... Locomotives.

Sew.ma.oil.es 10

IMPORTS Of Hardware, Iron, Steel and Metals into

the Port of New York, for the Week ending March 1, 1889 :

Naylor, Beuzon & Co. Bundles, 18t Bars, 485 Rocl C. M. Iron, cks., 20 Tillotsen L. G. & Co. Wire, coils, 429 Thomson A. A. & Co. steam plow, Athol Benj. & Co.

	Cases, 2 Armstrong M. & Sons, Casks, 3 Baldwin Bros & Co. Gun barrels, cs., 4 Barbour Twine Co. Machinery, cs., 3 Bloomfield J. E. & Co. Case, 1 Bloom N. Case, 1 Boker Hermann & Co. Packages, 108 Cranshaw W. G. Machinery, pkgs., 21 Drexel, Morgan & Co. Arms, Od., 15 Machinery, cs., 3 Cutlery, cs., 5 Degener R. & Co.	Thomson A. A. & C. Cuses, 16 Williamson Jas. & C. Pig, tons, 200 Order. Pig, tons, 2270 Pig, lot, r Wire rods, bdls. Rails, tons, 400 Old rails, 706 Rails, pcs. 540 Ore, tons, 1222 Sheet iron, box, Sheet iron, box, Sheet iron, box, Bars. 824 Bundles, 616 Tel. wire, cs., 11 Tubes, 6 Tubes, 6as, r Angle iron, bars
ı	Machinery, Cd., 2	Angle fron, bars

Degen-Coiled rods, bdls.,789 Spiegel ke Machinery, cs., 2
Disney & Tompkins,
Cases, 2
Downing, Sheldon & Co.
Guns, cs., 2
Machinery, cse., 1
Francis J.C. Ferris & Co. Spiegel, kg., 507.500 Spiegel, tons, 913 Spiegel, lot, 1 Scrap. kg., 696,593 Wire rods, coils, 626. Oxide, cks., 74 Plates, bdls., 2 Case, r Fuller Bros. Steel

Machinery, cs., 6
Field Alfred & Co.
Cutlery, cs., 9
Anvils, 32
Packages, 16
Casas 2 Abbott Jere, & Co.
Cases, 76
Wire reds, colls, 100
Anderson G. S.
Bundles, 43
Brown Bros, & Co.
Wire rods, bdls., 1417
W. rods, rings, 405
Baldwin Bros, & Co.
Case, 1
Baring Bros, & Co.
Blooms, 1053
Brown Wm.
Bundles, 174
Cases, 6
Carey & Moen.
Coiled B'semer wire
rods, bdls., 162
Wire, bdls., 209
Casiks, 36
Cortis N. J.
Wire rope, colls, 6
Drexel, Morgan & Co.
Blooms, 4371
Downing, Sheldon & Co.
Springs, 100
Duval H. R.
Plates, 116
Hammacher A. & Co. Abbott Jere, & Co. Cases, 8 Chaine, cks., 17 Nails, cask, 1 Casks, 2 Folsom H. & D. Folsom H. & D.
Arms, cs., 22
Cases, 6
Fleitmann & Co.
Ironware, cs., 10
Godwin Samuel & Sons,
Machinery, cs., 4
Godfrey C. F.
Arms, cs., 6
Graef Cutlery Co.
Chains, cks., 9
Ironware, cs., 6
Onses, 3
Howard Bros. & Reade,
Cases, 2

Cases, 2 Hartley & Graham, Arms, os., 74 Arms, cs., 74
Box, 1
Hurst F. W. G.
Tel. oable, knots, 2
Hensel, Bruckman &
Larbacher,
Machinery, cs., 6
Jacobs Bros.
Machinery, case, 1
Kronff Oscar,

Plates, 116
Hammacher A. & Co.
Wire, cask, 1
Ivison, Blakeman & Co.
Pens, case, 1
Knoblauch & Lichten-Kropff Oscar,
Machinery, pkgs., 20
Macy K. H. & Co.
Cases. 2
Mouquin H.
Corking mach.. cs., 2
Morchants' Dis. Co.
Chaiss, cks., 15
Ironware, cs., 7
Moore's Sons J. P.
Arms, cs., 10
Rizmann C. L.
Arms, case, 1

Knoblauch & Lichtom stein,
Blo ms, 514
Mayer, Strouse & Co. Casses, 23
McIllhaney W. H. Rails, 199)
Moss F. W. Bundles, 154
Bars, 8
Morton, Bliss & Co. Rails, 2006
Oelrichs & Co. Bundles, 40
Semou, Bache & Co. Tin, cases, 9
Emou, Bache & Co. Tin, cases, 9
Ensouper Oscar & Co. Needles, cs. 2
Temple & Lockwood, Cast tires, 20 Ritemann C. L.
Arms, case, 1
Smith W. O. & Co.
Machinery, pkgs., 2
Steiner, Kahn & Co.
Cases, 5
Schoverling, Daly &
Gales,
Arms, cs., 55
Gun barrels, cc., 5
Cases, 11
Struller, Lau & Co.
Arms, cs., 22

Cast tires, 20
Tires, 114
Woodford W. O.
Bundles, 127
Bars, 20
Cases, 9
Plates, 22
Order. Arms, cs., 22 Star Theo, B. Cask, 1 Steinham Bros. Order,
Blooms, 2594
Old leaf springs, Cases, 4 Scott Wm. P. Arms, cs., 8
39
310
Strond & Titus,
Cutlery, case, 1
Taylor Thomas,
(Case, 1) tons, 50 Knitting needles, case, 1 Tubes, 109 Bands, 95 Forgings, 33 Bars, 5 Spring steel, bdfs., 137 Cross ends, tons, 375 Bundles, 39

Taylor Thomas, Cases, 5 Thompson John, Cases, 2 Volsin Stevens, Shovels, bdls., 6 Cases, 14 Casks, 2 Chains, cks., 2 Volner G. Sew. ma., cse., 1 Metals. Aikman Jas. & Co. Tin plates, bxs., 88 Agostini J. Tin piates, bys., 88
Agostini J.
Old copper, case, x
Bank of Montreal,
Tin plates, bys., 253
Bond, Parsons & Co.
Tin plates, bys., 253
Bond, Parsons & Co.
Tin plates, bys., 370
Brown Bros. & Co.
Antimony, cs., 99
Cort N. L. & Co.
Tin plates, bys., 267
Coddington T. B. & Co.
Old scrap brass, pgs.,

Old scrap brass, pgs., Case, 1 Wiebusch, Hilger & Co. Cutlery, cs., 44 Casks, 11 ndmuller L. & Roel-Casks, 11
Windmuller L. & Roelker,
Arms, cs., 13
Winchester Arms Co.
Cases, 8
Witte John G. & Bro.
Cutlery, sheep shears, &C., Cs., 6
Arms case.

Arms, case, r Waliach A. & E. Old Scrap Diass, pg.s.,

Dickerson, Van Dusen & Co.

Tin plates, bxs, \$74

Elwei Jas. W. & Co.

Copper, bhds, 2

Copper, bbds, 1

Metal, bbl., 1

Field Affred & Co.

Gun cans. cs., 2 Cases, 2 Wolff H. & Co. Arms, cs., 2 Order, Machinery, cs., 2

Brown Bros. & Co. Coils, 2264 Wire rods, bdls., 848 Bars, 2295 Well and the deficiency of the control of the co 313 Bars, 2205 Rods, pkg², 3143 Baring Bros. & Co.
ads.
8,250 Rods, pkg², 3143 Baring Bros. & Co.
Old rails, pcs, 1951 Fig. tons. 625 Rods, pkgs, 9932 Bruckner, Evans & Co.
Wire netting, rolls,

Grinnell, Minturn & Co. Yellow metal, et., 30
Heray & Marrener,
Tinfoil, cs. 6
Lamarche H. & Sons,
Zinc, cks., 15
Speiter, ingoke, 2993
Montel F. T. & Son,
Metal, bbls, 4
Morton, Bliss & Co.
Brass tubes, 2603
Meyer G. A. & E.
Zinc oxide, bbls., 245
Moore's Sons J. P.
Gun caps, pkgs., 20
New Haven Clock Co.
Zinc, cs., 6
Phelips, bodge & Co.
Tin plates, bxs., 12,730
Rivera J. de & Co.
Old copper, cs., 4
Rogers H.
Zinc, pkgs., 2
Semon, Bache & Co.
Tin, cs., 50
Victor, Eishop & Co.
Platinum, box. 1
Order.
Tin plates, bxs., 25,7
251
Old brass tubes, 163 Porto Rico. Mach'y, pkgs. 14
Glasswre, pgs 13
Iron, pkgs. 740
Arms, cs. 13
Mf. iron, pkgs 35
Lead, bxs. 2
Sew. ma., cs. 13
Steel, pkgs. 6
Spikes, kegs. 25
Purmes ares 6 87 Pig. tons, 160 Duval H. R. Pig. tons, 200 Elliot, Son & Co. Iron, lot. 1
Henderson Bros. 2 Reade, Wire rods, cds. 3, 3 Iron, 130 Lee James & Co. Pig. tons, 100 Lee James & Co. Pig. tons, 200 Lee James & Co. Pig. R. R. cars... 30 1,615 Ag. imp., pkgs 11 422 I. r. g'ds, cs... 2 136 Copper still... 1 1,130 Brazil. Mach'y pkgs. 11 Clocks, bis. 148 Ptim., gals.14,180 fldw., pkgs. 120 Sew. ma. cs. 30 Cutlery, cs. 44 Pumps, pkge. 1 Firearans, cs. 5 Mf. irou, pgs. 5

Old brass tubes, 1063

announcement was not made until about March 20, and the delay was considered damaging to all interested. While the present uncertainty lasts there are no prices other than those of the circular list, and few sales. All are holding on. At the same time there are not many who would not shade prices in order to make a sale. Report says that the half-time policy will be adopted for the current month, beginning oth inst., but of this nothing can yet be said positively. The Philadelphia Ledger says: "The market is in such condition that no more coal will be produced than can readily be taken at remunerative orices. An advance of ten cents per ton on coal at the furnaces, it is said, will be put on, lump coal being scarce. A proper adjust-ment in this regard, it is said, fully warrants the advance in coal named." The Bituminous trade continues quiet, and Cumberland is scarce. Labor troubles are anticipated. The price alongside in New York is \$5.62 \$5.25. Freight from Baltimore to New York is \$1.46 and vessels in moderate supply.

Freight rates are: to Boston, \$1.25 @ \$1.40; to Providence, 90 cents @ \$1.

The total tonnage of Anthracite Coal from all the regions for the week ending Feb. 18, as reported by the several carrying companies, amounted to 409,119 tons, against 541,754 tons in the corresponding week last year. The quantity of Bituminous Coal sent to market for the week amounted to 98,859 tons, against 87,103 tons in corresponding week lest year. week last year.

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth st., i Philadelphia, Feb. 23, 1882.

PHILADELPHIA, Feb. 25, 1832. (
Pig Iron.—The market continues quiet and in most departments there are reports of a falling off in demand. Prices are not materially changed, but the tendency is toward easier rates, and it would be difficult to move large lines without making concessions of more or less importance. As regards Pig Iron, however, there has been more inquiry within the past day or two, and if the remarkably open weather continues an early opening of navigation may be looked for, and with that a more active movement in business generally. In any event the spring demand cannot be long delayed, so that it is reasonable to assume that the market is on the eve of improvement. the market is on the eve of improvement. The comparative dullness of the month now The comparative dufiness of the month now closing need cause no surprise in view of the enormous business of the two or three months preceding. Consumption has been maintained to such an extent that buying will become a necessity as contracts expire. There has been no accumulation of any importance, the entire production having been taken almost hot from the furnace. The taken almost hot from the furnaces The only difference there is, is simply in the estimate of values. Three months ago parties bought freely in anticipation of higher prices. Fortunately there was no important advance, but consumers have had use for all the Iron they bought. Higher prices were named during January, but as a matter of fact there was very little business done at the advanced quotations. The consequence is that prices which were then almost nominal are now shaded to good buyers. It is quite probable that a very large business could be done at once, if furnacemen would quote same figonce, if furnacemen would quote same figures as during the first week in December. This they are not prepared to do in view of their light stocks and the certainty that their product will be wanted for early consumption. Buyers have held off buying, because if prices did not decline they had no fears of an advance, and, in fact, for the past month or so that feeling has been fully warranted. In support of their views, foreign markets have declined 2/@3/\$\tilde{\ell}\$ ton, while freights have declined probably 3/@4/, besides some little falling off in prices of finished iron. There is not much reason for expecting lower figures, however, and it is likely that the first intimation of a revival in demand will have a tendency to stiffen prices. The will have a tendency to stiffen prices. The outlook cannot be said to be quite as favorable as it was a year ago, but the enormous consumption is shown by the continued scarcity of almost everthing for prompt delivery. It is true there are not quite so many orders pressing for acceptance, but there is a vast amount of work under conthere is a vast amount of work under contract, and if crop prospects continue favorable, there is reason to expect a very large demand. People have got so much in the way of asking higher prices or refusing business, that they are inclined to think there is something wrong when they find room for an order at market rates. We see nothing likely to develop weakness, and, on the whole, are inclined to the idea that prospects are better than they were a week ago. Prospects are better than they were a week ago. Prospects for seeding are said to be excellent, exports are increasing and the money mar-ket appears to be steadier. In Great Britain, the agreement between the Scotch and Cleveland iron masters for limiting production has been extended to October, while the advance in wages has stiffened prices of finished Iron. These may not exercise immediate influence on the market, but in their development they will undoubtedly be of the greatest importance. For the time being, however, as we have said, there are no accumulations of stocks, and while consumption shows no signs of abatement, there is every reason to expect a large and healthy business at something near the present range of values. Sales during the week have been made at \$22.50 @ \$23, at furnace, for Gray Forge, \$23 @ \$23.50 for No. 2, and \$24.50 @ \$25.50 for No. 1 Foundry. In exceptional cases we have heard of business being done at both higher and lower figures.

Foreign Iron .- Middlesboro' is dull and meglected, but No. 3 may be had at \$21.50 @ \$22. The decline in freights makes consumers very indifferent, and there is an impression that by the time such grades are required prices will be lower, so that offers for large lots are difficult to obtain. Bessemer is as dull as anything on the list, proba-bly more so. Buyers appear to expect considerably lower prices, and parties who COAL.

COAL.

The Anthracite Coal market is weak—in fact, demoralized. No programme in regard to future restrictions of production has yet been announced, but an agreement on the part of operators is expected soon in order to take effect the present month. Last year the take offect the present month. Last year the week and prices and parties who bid \$26 two or three weeks ago are now unwilling to bid \$25. The weakness is not so much in material as in the cost of transportation, and it is quite likely that a heavy demand will set in before long. There are sellers at less than \$26—probably \$25.50 would be accepted from a good buyer. No sales have been reported during the past week and prices are entirely nominal. take effect the present month. Last year the week and prices are entirely nominal

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nterr large o spring it wou regula the spi the pri if the dized in to assu-manufa any for several sales are reported at prices varying from \$45.50 to \$46 at mill. The best quali-ties are firmly held, although concessions can be had on some descriptions.

Blooms.-There is no change, and sales been made as follows: Charcoal is, \$75; Run-out Anthracite, \$62.50@ Blooms, \$75; Run-out Anthracite, \$62.50 @ \$65; Scrap Blooms, \$55, and Northern Ore

Bar Iron .- There is more inquiry, but buyers are inclined to insist upon conce or postpone placing their orders. Manufacturers are willing to accept 2.8¢, but we have not heard of a ything being done at lower figures, although 2.7¢ has been offered for large lots. Transactions during the week have not been large for reasons above named, but there is evidently a large amount of business in sight, some of which will doubtless have to be placed at an early date. So far as this market is concerned there is so har as the state has the content of the large in prices, although it will doubtless be affected by whatever changes may be made in other sections. There is somewhat of an impression that prices are easier in the West, but so far as we can learn there has been nothing offered likely to interfere with quotations at Store prices are firm at 3¢. Skelp in active demand, and sales have been made at 3.1¢ @ 3.2¢.

Structural Iron.-There has been very little new business entered within the past week, but prices are firm and unchanged. The mills are still a good way behind in their deliveries, and there is no uneasiness in regard to a few weeks of quietude. We quote as gard to a few weeks of queetide. We quote as before: Angles, 3.10¢ @ 3.25¢; Beains, 4¢; Channels, 4.2¢; Tees, 4.3¢. For future delivery, orders for Beams and Channels can be placed at combination prices.

Plate and Tank Iron.-The market is very dull, and the absence of demand begins to excite remark. The higher grades are in good demand, but Common Plates appear to be entirely neglected. The mills are running full so far as we can learn, but contracts are being rapidly exhausted, and there is some anxiety to see new business on the market. Prices are nominally unchanged, but concessions of 1/4 @ 1/4 @ 11 would doubtless be granted for a good order. We quote Tank Iron at 3.5#; Refined at 3.75#; Shell at 4#; Flange at 5.25# @ 5.50#, id Firebox at 6.25¢ @ 6.50¢.

Sheet Iron .- The demand continues large and the position appears to be very satisfac-tory. There is no change in prices and, so far as can be seen, no probability of any being made at present. For small lots average prices are about as follows :

Common Sheet, No. 27 and 23 Gommon Sheet, No. 27 and 23.
Common Sheet, No. 26.
Common Sheet, No. 26 to 25.
Common Sheet, No. 16 to 21.
Best Refined ½6 @ ½6 advance on the above.
Best Bloom Sheets, No. 26 to 28.
Best Bloom Sheets, No. 26 to 25.
Best Bloom Sheets, No. 26 to 25.
Best Bloom Sheets, No. 26 to 27.
Common Red Plates, 37-16 to 16.
Bitte Annealed, 37-16 to 16.
Best Bloom Galvanized, discount.
Second quality, discount.

Wrought Iron Pipe.—There is a good demand for Boiler Tubes, at 37 1/2 % discount from list price, and Gas and Steam at 55 %

Steel Rails .- Prices are weak, and it is impossible to quote with any degree of ac-curacy. Prompt deliveries command \$56 @ \$58, but for later dates it is said that orders may be placed at \$55. We have not heard of any recent sales, however, so that quotations are almost nominal. The continued heavy imports are somewhat disquieting to heavy imports are somewhat disquieting to manufacturers, although it is well known that the deliveries are on contracts made several months ago. The demand is likely to be quite large during the summer, but there is a strong probability that the supply will be more than equal to all requirements; hence the weakness in prices.

Steel Bleoms.-There is some inquir and one or two small lots have changed hands at a shade under \$46. It is reported that a lot of 10,000 tons was sold in New York, but we have no details of the transaction. March shipments offered at \$45.50.

Iron Rails .- Sales of small lots 56's have Fron Rails.—Sales of small fots 50's have been made at \$48 @ \$48.50, at which we quote the market steady. There appears to be very little inquiry for large lots, 200 to 300 tons being as much as buyers ask for. Light Rails sell at \$50 @ \$52, according to pattern. A lot of English 35's sold recently at about \$46 to close out.

Old Rails.-There is very little demand for large lots, and it would be difficult to find buyers at over \$29. Small lots for spot de-livery command \$30 @ \$30.25, but buyers are easily satisfied, and offerings of a few thou-sand tons would easily break the market.

Crop Ends-Are offered for ship it is difficult to obtain bids at figures acceptable to sellers.

Scrap Iron—Is steady at \$32.50 @ \$34.50, according to quality, for No. 1 Wrought, and \$20 @ \$21.50 for Cast.

Nails-Are steady and firm at \$3.40, net.

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, PITTSBURGH, PA., Feb. 28, 1882.

The general Iron trade remains much the same as a week ago, with the exception, possibly, that it is becoming more settled. The apprehension entertained some time ago of a boom has pretty well subsided, and the indications now are that there will be a good cations now are that there will be a good healthy spring trade. As stated in our report of last week, it is probable that the heavy trade during the entire winter season, the open weather permitting of the prosecution of outdoor work almost without interruption, thereby causing an unusually large consumption of Iron, will prevent the spring trade from assuming the proportions. large consumption of Iron, will prevent the spring trade from assuming the proportions it would otherwise have done, but there is every reason to believe that there will be a regular and healthy trade, not only during the spring, but throughout the summer. At the present time the crops promise well, and if the expectations now entertained are realized in regard to the crops, we think it safe to assume that the demand for Pittsburgh manufactures this year will exceed that of any former year in the history of the country. It is worthy of mention that the facilities for transportation, will prevent the proportions are considerably bet-

Muck Bars.—There is more inquiry, and ter; the railroads are now able to put goods through in much better time, and rates to all points West and South are low. Iron and Nails have been shipped to St. Louis by river for some time past at the rate of 10¢ per cwt., and the rate all rail is 20¢. These low freight rates have been greatly to the advantage of our manufacturers as it enables them to meet competition that otherwise they could not cope with.

Pig Iron.-While business continues quiet, commission men nearly all report an increased inquiry, and a more active market is looked for in the near future. The policy of mill owners generally at present is to buy only to supply immediate wants, although we occasionally hear of an inquiry for a round lot; we are cognizant of a buyer having been on the market within the past few days for a thousand-ton lot, and in view of the very light purchases all this month, it is believed that there will be a number of buvers leved that there will be a number of buyers looking around before many more weeks elapse. Stocks in some mill yards are reported as being very much reduced and will soon have to be replenished, and there is not much doubt but what business will be considerably more active next month, even if the hand-to-mouth policy should be adhered to. The receipts appear to be falling off, in-dicating that the great proportion of the de-layed Iron has been delivered, and this goes to strengthen the belief that a more active market is only a question of a few weeks at most. There may be a spurt inside of a week, and it may be delayed for several weeks, but furnacemen generally are con-ident that the existing lull will soon be brought to a close Prices may be fairly quoted at \$25.50 @ \$26.50, 4 mos., for good brands of Neutral Forge, \$23.50 @ \$24 for White and Mottled ditto, and \$27 @ \$28 for half and the state of the state all-ore ditto. Bessemer, \$29 @ \$30 for best quality. Foundry grades, \$26 @ \$28 for No. 2, and with some extra brands of No. 1 sell-ing as high as \$29. Cold-blast Charcoal, \$38

Muck Bar .- The market is weaker, with nore offering than there is a demand for; buyers appear to be impressed with the be-lef that prices are destined to rule lower, lief that prices are destined to rule lower, and they are buying very littie in consequence. The last sales reported were at \$45.50, cash, to \$46, 4 months, but commission men report that it is now difficult to obtain \$45, cash, for the best quality of neutral. There was a rumored sale, last week, of a roco-ton lot at \$42.50, but well-informed operators take no stock in the rumor aforesaid.

Manufactured Iron.-The demand is not as active as it was in December and January, but the mills continue busy, and January, but the mills continue busy, and there is every indication of a good healthy spring trade. February is always a dull month, coming as it does between the close of winter and opening of the spring trade. Prices remain unchanged, and there will be no change made in the card until the next meeting of the Western Iron Association in April and some these. in April, and perhaps not then. The de-mand, as a rule, is for small lots for delivery in the next 30 days, and the mills continue to refuse to contract ahead at any fixed price. Morchant Bars, 2.50¢ rates; Sheet Iron, 4.30¢ for No. 24; Tank Iron, 3.30¢; Plow 'Slabs, 3.50¢; Plow Wings, 3.80¢; Plate Iron, 3.50¢; Skelp Iron, 3¢ @ 3.10¢. The demand for the latter has fallen off materially in symposthy with the Pipe trade. terially in sympathy with the Pipe trade.

Nails .- There is an improved demand. nd the indications are that the spring trade is about to open up; manufacturers report business as having been unusually good all winter, and as a consequence there is scarcely any stock in first hands. Prices firm, but unchanged; \$3.40, 60 days, and an abatement of to¢? keg on carload lots, and 2 % off for each

Wrought Iron Pipe.—The demand for Pipe has been on the decline for some time past, but until within the past week or two the mills have been busily employed in working up orders left over from last year. The outlook is very promising for an active spring trade, and the mills are busily engaged in working up an assorted stock gaged in working up an assorted stock. Prices remain unchanged; discounts on Gas and Steam Pipe, 60 and 60 and 5%; on Boiler Tubes, 40%; Off-well Casing remains unchanged at 85% & foot, net; ditto Tubing,

Steel.—There is a very fair business the mills are all fairly employed, and prices are steady. The demand, as a rule, is for small lots to supply immediate wants, and nanufacturers are loth to contract for

manufacturers are forn to contract for future delivery.

Rails, &c.—The Steel Rail market is easier, and the falling off in the demand is owing to an apprehension on the part of buyers of still lower prices. The mills here, as elsewhere, are sold up for several months shead, but we bear of offers to sell for late. ahead, but we hear of offers to sell for late

as elsewhere, are sold up for several months ahead, but we hear of offers to sell for late summer delivery at \$58, free on cars in Pittsburgh. Railway Spikes remain unchanged at \$3.15 per keg, 30 days, for round lots, and \$3.25 in a small way. Splice Bars, \$2.70 @ \$2.80. Track Boits, \$3.75 @ \$4.25, the latter with hexagon nuts.

Scrap.—There is a fair business, but no change in prices. Wrought, \$33 @ \$35 \$\frac{3}{2}\$ net ton, the outside figure for Selected Railway; Wrought Turnings, \$22 @ \$23; Car Axles and Car Springs, \$38 @ \$40; Coil Springs, \$31 @ \$32; Car Wheels, \$30 @ \$31, gross; Cast Borings, \$15.50 @ \$16, gross.

Window (Hass.—There is only a moderate demand at present, but the outlook for the spring and summer never was better, and manufacturers are anxious to get a good assorted stock "piled up" in order to be ready for the same. Card and discounts remain unchanged; we continue to quote at 60 and 20 \$2 off for carload lots and upward on single strength and 70 \$2 on double.

on single strength and 70% on double.

Coke.—There is no abatement in the de core.—There is no abatement in the demand, and with increased facilities for transportation, business would be largely increased. Prices remain unchanged, \$1.75 \$\overline{P}\$ ton, free on cars at ovens, in a regular way, and \$1.90 \$\overline{@}\$ \$2 for small foundry orders.

Coal.—The Coal trade of Pittsburgh con-

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark Street, cor. Lake Street, CHICAGO, Feb. 27, 1882.

grades of Scotch have, however, undergone no change. We quote: Lake Superior Charcoal, Nos. 1 and 2, \$31 @ \$32; No. 3, \$33; Nos. 4, 5 and 6, \$34 @ \$36. Calumet, \$28 @ coal, Nos. 1 and 2, \$31 (@ \$32; No. 3, 533, Nos. 4, 5 and 6, \$34 @ \$36. Calumet, \$28 @ \$29; Silvery Soft, \$26 @ \$27; Crane, No. 1, \$29; No. 2, \$28.50; Thomas, \$28.50 @ \$30; Imported Scotch, \$30 @ \$31, and American Scotch, \$27 @ \$30.

Manufactured Iron.—The Merchant Iron trade continues active, prices remaining un-changed and the market firm. Dealers' reports for the month show that the trade for this month, although a short and generally a dull one, has been equal, in many instances, to the best month in the year. We quote: Bar, 3¢; Angle, 4¢; T, 4¼¢; Beams and Channels, 4¼¢ @ 4½¢; Hoop at 3.80¢ rates. Sheet, Plate and Tank, 10 to 14 gauge, 4¢; 15 to 17 ditto, 4.30¢; 18 to 21 ditto, 4.60¢; 22 to 24 ditto, 4.80¢; 25 and 26 ditto, 5¢, and 27 ditto, 5.20¢. Patent Cold-rolled Shafting, dis. 20%; Norway Iron, Original Bars, 5¢ rates; Norway Iron, re-rolled, 5¾¢ rates; Ulster Iron, 4½¢ rates; Low Moor Iron, 8¢ rates; Nuts and Washers, 7¼¢ off list; Wrought Boat Spikes, 4¢ rates.

Nails.- The demand for Nails during the week has been such as to decrease stocks very materially. Quotations remain firm, as follows: \$3.40 ft keg for rod. to 6od. for carload lots, and \$3.50 for smaller orders, with the usual discount off.

Steel .- The demand for Steel during the Steel.—The demand for Steel during the week past has been fair and prices, as quoted, are held very firm. Tool, 12¢; Machinery, O. H., 5½¢; Crucible Machinery, 7¢; Hammer, 2 inches and under, 8¢; over 2 inches, 9¢; Cast Spring, 7¢, and O. H. Spring, Tire and Sleigh Shoe, 5¢. Sheet, first, second and third quality, 12¢, 10½¢ and 8½¢, respectively; Crucible Plow, 6¾¢; Eagle Plow, 5½¢; Iron Center Plow, 10¼¢, and soft Steel Center Plow, 10¾¢.

Scrap Iron.—The Scrap Iron market is

Scrap Iron .- The Scrap Iron market is very dull, there being scarcely any demand. We quote (dealers' purchasing prices): No. 1 Wrought Scrap, \$24, net ton; No. 1 Rail-Wrought Scrap, \$24, net ton; No. 1 Railroad Scrap, \$27 @ \$28; ditto Heavy Cast, \$19; ditto Stove Plate, \$14; ditto Cast-iron Borings, \$9 @ \$10, and ditto Machine Shop Turnings, \$12 @ \$13.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts., Chattanooga, Peb. 27, 1882.

Business has somewhat improved in this district since our last report. There is rather exceptional activity in all lines of manufacturing for the season. The weather has been more favorable the past week for has been more favorable the past week for outdoor movements than for many weeks belower when spring opens, but it is question-fore, being dry, windy and cold. The able whether a further spurt upward may streams are in fine beating condition, and there is an active business in that line of freighting. We hear of no failures or embarrassments of Iron makers or dealers, an evidence that that line of production has not been seriously affected by the series of small stock and grain panies of the month.

Bot Copper. Soldy © S. Heavy duto.

Bot Copper. Soldy © S. Heavy duto. stock and grain panics of the month.

Pig Iron,-There is nothing of special in-The January rates are erest to report. The January rates are very steadily maintained, with occasional er prices on small, and a shade below on higher prices on small, and a shade below on large, lots. Requests are in liberal number from good parties, and stocks are, as they have been for several months, low. There is considerable activity in preparations for erecting new plant, and the same is true of movements looking to an increase of fuel supply. We quote: No. 1 Foundry, \$25 @ \$27; No. 2 Foundry, \$22 @ \$24; Gray Forge, \$20 @ \$21: White and Mottled, \$19 @ \$20: Car-wheel Metal. \$13 @ \$40. @ \$20; Car-wheel Metal, \$38 @ \$40.

Ores.—We quote: 50 % Brown Hematite, ton, \$2 @ \$2.75; Red Fossil, \$2 @ \$2.25, delivered at furnace.

Miscellaneous Articles .- Old Rails ar steady at \$29, the demand being mostly on shipping account. We quote Scraps: Wrought, \$24 @ \$30; Cast Scrap, \$14 @ \$17 Old Wheels, \$29 @ \$31.

Nails.-The Nail market is steady at \$3.40 rate. The demand is entirely legitimate, and if the building trade the coming spring is as large as it now promises to be, the request will at least keep up to present proportions, and fully and steadily maintain the cost at the present rate.

Manufactured Iron.-All the mills are doing a satisfactory business. Bar continues
fairly steady at \$2.75 rates. Producers have
\$2.60, card rate. work ahead to carry them well through the spring months. We quote: Railroad Spikes, \$3.30; Track Bolts, \$4.25; Fish Plate, \$3.

Coal.—We quote: Fancy Lump, \$4; and dommon, \$3 @ \$3.75; Run of Mine, \$2 at

Coke.-Furnace Coke, \$3 at point of con umption; Foundry, 10¢ @ 12¢ P bushel. Steel and Iron Rails .- We quote : Steel 60 at mill; Iron, \$48 @ \$49; Small T, \$55

BOSTON.

FEBRUARY 25 .- The market has remained FEBRUARY 25.—The market has remained dull and unchanged since our last report. The demand has been very small and buyers are only supplying their immediate wants in view of a possible decline in prices. At present prices remain steady and consumption continues on a sufficiently large scale to ab-sorb the furnace production and prevent any large accumulation of stock, but the tendency of the market is easier, and it is very probable that prices will soon range lower. Prices at of the market is easier, and it is very probable that prices will soon range lower. Prices at shipping ports for American Pig are \$26 @ \$27 for No. 1 X; \$24.50 @ 25.50 for No. 2 X, and \$23 @ \$24 for Gray Forge. Small spot lots command \$2 @ \$3 \$2 ton above these quotations. Foreign Iron has remained quiet and unchanged. The demand is very light, but the market remains in a steady position. Stocks are very small and we have position. Stocks are very small and we hear of but few lots coming in. A lot of 4000 tons of Glengarnock and Carnbroe is soon expected

prices quoted by agents. We quote Eglinton at \$24 @ \$25 for moderate-sized lots; Lang-CHICAGO. Feb. 27, 1852.

Pig Iron.—The market, generally speaking, continues steady and quotations firm. Scotch Iron has been slightly easier during the week past, owing to a lot of inferior grade being put on the market as No. 1. First grades of Scotch have however undergrades of Scotch have however have her have have her have have her have have her have tured Iron.—A good steady demand has continued to rule for Manufactured Iron generally, and prices are firm and unchanged. Bar Iron.—The demand for Bar continues to be of very good proportions and prices firm. The mills are yet running steadily on back orders and are slow in delivery. Stocks at the stores are broken as the constant drain takes out the Iron as fast as it comes in. We quote \$3 at store; Norway and Swedish are in good demand, and very firm at \$4.25 for Bars, and \$5 @ \$5.25 for Shapes. Plate Iron.—The demand is good and prices are firm and unchanged. The defining the state of the liveries from the mills are improving. We quote Tank at \$3.60; Refined at \$4; Shell at \$4.45; Flange at \$5.45. Tubes are in good demand, and quoted nominally at 37½ % from list, but sales are made at 40 % off. from list, but sales are mane as Sheet Iron.—Trade is of moderate propor Sheet Iron.—Trade is of moderate proportions at our previous quotations. We quote: Sheet Iron, \$\frac{1}{2}\phi \text{ Qr} \text{ 4}\phi \phi \text{ ditto Refined, 5}\frac{1}{2}\phi \text{ 2}\phi \text{ Qr} \text{ 4}\phi \phi \text{ ditto Refined, 5}\frac{1}{2}\phi \text{ 2}\phi \t per.—The market for Lake Inget has been very dull and prices remain about the same. We quote 19/40 @ 19/20. The combination prices of Manufactured Copper are unchanged. We quote: Sheathing, 28½; Braziers, 30½ @ 32½; Bolt, 30½; Copper Bottoms, 31½ @ 32½; American Yellow Sheathing Metal, 20½; English Yellow Sheathing Metal, 10½ in bond. Lead.—The market for Lead has remained quies at \$5,20 @ \$5,24 for carloads and \$5,50 in a at \$5,20 @ \$5,25 for carloads and \$5,50 in a jobbing way. Manufacturers' prices are unchanged. We quote: Bar, 6½¢; Pipe, 7½¢; Sheet, 8¢; Tin-lined Pipe, 15¢; Tin Pipe, 35¢—all less 10 %. Spetter.—The market has been fairly steady at 6¢. Sheet Zinc is procked. weaker and is quoted at 74¢. Tin.—The market here has been dull and nominal. The Loudon market is unsettled. In New York there have been sales at from 24¼¢ @ 25½¢ there have been sales at from 24% ¢ @ 25% for spot. Tin Plate.—The market here has been weaker and the demand is quiet. We quote: Charcoal Bright, \$6.75 @ \$7: Ternes at \$6 @ \$3; Cokes, \$5.75 @ \$6; ditto Ternes, \$5.50 @ \$5.75. Old Metals.—Copper and Brass are in a sensitive and unsettled condition at the revised quotations of last week, and a quick turn either way could occur without exciting much surprise. It is generally believed that these metals are to be

Bolt Copp	er										 So. 1936	@	S.	
Heavy dit	to	***									 1856	60		
Kettle bot	tom	S					÷				 16%	a	. 1	65%
Compositi	on,	No	ž.					. ,		,	 1734	(10)		736
Heavy Br.	388										 13	0	I	13/8
Y. M. She	athi	ng		. ,			,				1134	0	1	2
Light Bra	88.										 1156	a		
Lead, soli	d										432	0		
Ditto, Te	1						×		×		436	60		456
Zinc			 	 							 434	60		412
ewter, N	0. 1										 16%	60	. 1	632
Ditto, N	0, 2					× 1					 836	60		834
-Commo														

CINCINNATI.

FEBRUARY 27 .- Pig Iron. - The market in the past week has been fairly active; although the business has been one of from hand to mouth, it was large. The demand has been mostly for the Charcoal and Coke foundry kinds. The rolling mills are making some inquiry for the better grades. The lower grades, Stonecoal kinds, are rapidly disappropriate that they been propriet in the property of th pearing and the furnaces, that have been pro-lucing the Silver Gray Softeners are arranging to make their outputs larger and of highe grade. Prices remain firm for all standard kinds at about the following quotations: No. kinds at about the following quotations: No. I Hanging Rock Charcoal Foundry, \$29.50 (@ \$30; Tennessee and Alabama, \$28 (@ \$28.50; Hanging Rock Coke, No. I, \$28.50 (@ \$29.50; No. 2, \$1 less; Virginia and Southern Coke, No. I, \$27 (@ \$27.50; No. 2, \$1 less; Hanging Rock Stonecoal, \$27; No. 2, \$26; Silver Gray Softeners, American Scotch, No. I, \$26.50; No. 2, \$25.50; No. 3, \$24.50; Cold-blast Charcoal Car-wheel, \$37 (@ \$40; Warm-blast, \$30 (@ \$35; Bar Iron, \$2.60, card rate.

LOUISVILLE.

LOUISVILLE.

W. B. Belknap & Co., Iron and Steel Merchants, Nos. 113 and 115 Main street, report to us as follows, under date of Feb. 25: The great flood, which has just brought the highest water known since 1817, reached its maximum on the 22d inst. Large portions of our city were submerged, and many important mills and factories stopped. The country roads, already in a deplorable condition, fell just short of navigability. These, with the shaking of confidence in railroad and enterprise by the "bearing" of stocks, have brought about in some quarters distrust of the immediate future of iron. Makers, however, declare they are booked for months ahead, and it would take an exceptionally for the card. Hoop Iron is in better supply and Sheet little called for. Nails are not changed in any material degree—since the date of my last, such alterations as have been recorded having been for the most part unimportant. It is worthy of note, nevertheless, that these few changes the wholly in a downward direction, so that, even if of no particular moment per se, they have their mission as giving indications of the direction in which the wind blows. As regards the open markets there is nothing specially new to note, further than that almost all kinds of crude irons have become slightly weaker, intensed there can be no doubt, by the movements at Glasgow. It had been somewhat confidently anticipated that the expense of the money market, and the extense of the money market, and the extense of imparting an improved tone to the market for Pig is at summer's drought, autumn speculations, and the winter flood. There is a tendency to curtail rather than expand business.

Messers Geo. H. Hull & Co., Commission Merchants, report to us as follows, under and the winter flood. There is a tendency to curtail rather than expand business.

Messers Geo. H. Go. Commission Merchants, report to us as follows, under and the consequent small shipments. The result, at all events, is as stated, and at the time of this writing crude irons are weaker

and the price named for it is \$26. The only business done is in supplying actual wants, as date of Feb. 24, 1882: The market for Pig at any time these two months. Even in Cleve-

buyers generally are holding off from the high | Iron is quiet. Stocks are very light and furtheir contracts, but are having difficulty in getting Iron to consumers as fast as it is required for immediate use. Mill Irons, which required for immediate use. Mill Irons, which were held for future delivery at \$25 two weeks since, could probably be bought at \$24 and \$24.50 to-day. There is, however, no Iron pressing on the market, and, as furnaces are sold several months ahead, it is altogether likely that the market will react before there is any pressure to sell. We before, there is any pressure to sell. revise quotations as below:

FOUNDRY IRONS		
No. 1 Hanging Rock, Charcosl	30,00 @	31.00
No. 1 Hanging Rock, Stonecoal and		-
Coke	27.50 88	28,00
No. 1 Southern, Stonecoal and Coke		
No. 2 " " "	25.50 @	26.00
"American Scotch"	25.50 60	26.00v
Then purel aray	25.00 76	25 00
Close Silver Gray	23.00 @	24.00
MILL IRONS,		
No. 1 Charcoal	25.00 @	26.00

No. 1 Charcoal
No. 1 Stonecoal and Coke, Neutral. 24,00 @ 24,50
No. 2 Stonecoal and Coke, Neutral. 24,00 @ 24,50
No. 1 Stonecoal and Coke, Cold-short. 23,00 @ 23,50
No. 2, Stonecoal and Coke, Cold-short. 23,00 @ 23,50
No. 2, Stonecoal and Coke, Cold-short. 22,50 @ 23,00
White and Mottled, Cold-short and
Noutral Neutral CAR WHEEL IRONS. 21.00 @ 22.00 Central Kentucky, Cold-blast 34.00 @ 37.00

ST. LOUIS.

Messas, Hoffer, Plumb & Co., Pig Iron and Messus Roffer R. From & Co., Fig from and Iron Ore Merchants, 417 Pine street, 33/26 write us, under date of Feb. 25, 1882; This market is still very quiet, no business of any importance being done. We continue

e	quotations of last week :
3	HOT BLAST CHARCOAL.
9	Missouri
	Missouri
	MILL IRONS.
5	Red-short
1	CAR WHEEL AND MALLEABLE IRONS,
	Missouri 28.06 @ 35.06 @ 35.06 Southern 35.00 @ 37.66 Ohio 32.00 @ 46.66
t	RALTIMARE

BALTIMORE.

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows, under date of Feb. 27, 1882: The Iron market continues very quiet, with heavy consumption and prices unchanged.

Baltimore	Cha	recal	177	icel	Ire	m.	 \$35.00	@	18.00
Virginia C.	B. '	Whee	al Ir	on.			 30,00		
Anthracite	No.	1					 20,00	(0)	27.00
		2						(2)	25.00
41	No	3					 21.00	(Ta)	23.00
**		Red					20.00	(3)	21,00
Charcoal (. B	Bloc	HIS				 70.00	0	75.00
Refined Blo	on	8					 60,00	03	65.00

unchanged at annexed ngures :						
Ref. Bar Iron, 1 to 6 x 36 to 1 ?	B	2	g-ro	0	3	¢.
" 1 to 4 5 x 1/2 to z p	1D	2	8-10	00	3	Ġ.
and Square	Th	2	8-10	0	4	d
Hoop Iron, 11/4 wide and upward	**		332	60	33	14
Band Iron, from 11/4 to 4 in. wide.,	64		3			14
Horse-shoe Iron	4.5		3/4			
Norway Nail Rods			316	as .	· L	0
	8.5		378	60	05	.0
	6.6		8			60
Common Horse Nails				8		
Perkins' Horse shoes & keg of 100						
" Mule shoes				. 5	.87	250

RICHMOND.

our change in prices since has re	DOLD .
No. r Scotch Pig Iron	26.00 @ 29.50
No. r Anthracite Pig Iron	27.00 68 29.60
	24.00 68 25.50
No. 3 "	60 23.50
No. 1 Virginia Coke Pig Iron	25 00 60
	22,50 66 21,50
No. 3 " " "	20.00 (6 23 00
Virginia Charcoal C. B. Wheel Iron	
Old Rails.	
Wrought Scrap, No. 1	26,00 @ 28.00
Cast, Machinery Scrap	20.00 (6 21.00
Refined Bar Iron	35 @ 3.16
Horse Shoes (Tredegar)	@ 4.00
Mule "	66 5.00

Our English Letter.

Review of the British Iron, Steel, Wetal and Hardware Trades.

(From our Regular Correspondent.)

land, where the reserve stocks were decreased by nearly 7000 tons during January, prices have given way, and No. 3 is quoted at from 41 % to 42. In Scotland warrants, are not very strong at 49/. In reference to my last week's remarks as to the security afforded by Scotch warrants, I am assured that the full thre-fifths of No. 1 is always hold by the store-keepers before the warrants are issued, so that there need be no fear on that head. It is as well that this should be stated, although, as a matter of course, nobody ever doubted the bona fides, or integrity of Messrs. Connal, in the matter. The remaining portion of my last week's remarks may stand. Should they elicit criticism, I fancy it would be wholesome and healthy even if a little rough. There is a slight reduction in the additions to Connal's Glasgow stores, but it is commonly agreed that the makers themselves are withholding iron in their own yards, with a view to effecting a superficial change for the better in the statistical along for the better in the statistical aposition. Leaving the open markets and turning to the actual state of affairs at the works, I find that there is still a consoling of the month of January are of a very for the month of January, 1881. The four exports was £10,6 £10,6 £10,0 £10,0 and four exports was £10,8 £20,61,417, against 197,112 tons, valued at £1,645,280 in the same month of 1881. The guantities of the same month of 1881. The guantities of the same month of the month of January are of a very favorable tenor. They show that the value of our exports was £10,8 £20,61,417, against 197,112 tons, valued at £1,645,280 in the same month of 1881. The guantities of the same month of 1881. The guantities of the same month of 1881. The principal tenor. They show that the value of our exports was £10,820,60,820,compared or respect to some four and steel.

SCOTCH PIG IRON

18 (all), with warrants at about 49/, and the principal steel of the same month of 1881. The principal steel.

19 (all), with warrants at about 49/, and the ste my last week's remarks may stand. Should they elicit criticism, I fancy it would be wholesome and healthy even if a little rough. There is a slight reduction in the additions to Connal's Glasgow stores, but it is commonly agreed that the makers themselves are withholding iron in their own yards, with a view to effecting a superficial change for the better in the statistical position. Leaving the open markets and turning to the actual state of affairs at the works, I find that there is still a consoling position. Leaving the open markets and turning to the actual state of affairs at the works, I find that there is still a consoling amount of activity in almost all directions, the worst employed concerns being, probably, the "list" houses of South Stafforshire. In Sootland, as well as in the North of England, the forges, mills and foundries are well engaged, there being a particularly strong demand for plates and other sorts of shipbuilding iron. At present I quote: Ordinary Scotch Bars, £6. 15/ @ £7, with £7 for "Glasgow," "N. B. Crown" and "Govan;" hoops, £8; nail rods, £7; angle iron, £8; boiler plates, £8. 10/, and ship plates, £8. Large-sized water or gas pipes range from £4. 5/ @ £5, and small sizes, irregular castings, &c., £5. 10 @ £7. The "extras" in Scotch finished iron are:

FLAT, HALF-ROUND, CYAL AND HALF-OVAL.

FLAT, HALF-ROUND, SVAL AND HALF-OVAL, PER TON.

			8/4/1	3-16"	34"	5-16"	34"	34'
5-16"	wide,	×	70	-	90/	-	7.0	/3
3611	66	X	_	100/	80/	60/	-	-
9-16"	6.6	×	-	mann	60/	60/	50/	20y
Lette.	6.4	×		60/	50/	50/	40/	
5/11	8.6	XXXX	-	50/	40/	40/	30/	30/
3/11	0.6	×	60/	49/	30/	39/	20/	RO/
26"	4.6	×	40/	39/	20/	20/	IO/	10/
E & 1/6"	6.6	×	30/	20/	10/	zo/	_	-
1% to 6"	8.4	×		IO/		_	-	-
5% to 7"	4.6	×	-	20/	IO/	ro/	IO/	10/
7%'	8"	8	16"	9"	10"		II/	12"
20/	30/		0/	50/	50/	(60/	60/
	ROU	ND, I	HQUA	RE ANI	OCT	AGON.		
13% in. to	13% in		10/	1 7	-16 in		5/ to	o ro/
42.4			20/	1	35 in		. 10/ to	0 26/
	41/4 m.		30/	5-	-16 in		.20/ te	0 30/
	41/2 in.		40/		34 in.		.30/ tu	0 40/
	43% in.		50/	No.	4 W.	G	.40/ to	102 (
	5 in.		60/	No.	5 W.	G	.50/ to	60/
	5% in.		70/	3-16	and ?	NO. 6.	.70/ 86	807
	51/2 in.		80/	No.	7 W.	G	90/ to	100/
	5% in.			No.	8 W.	J		320/

are alleged to have benefited considerably by that branch, which arrangement is not likely to last, as its orders in England since January Ist are stated to have reached 50 tons only.

It is opposed by the English agents of the different Belgian makers, and seem likely to become inoperative before long. The Cleveland workmen who were out on strike when land workmen who were out on strike when I last wrote have gone on in under the promise of an immediate advance, but the Staffordshire men have now taken up the ball, and are kicking it in the same direction. Staffordshire marked bars remain unchanged at £7. 5/ for the "miter" brand of Philip Williams & Son; £7. 10/ for the B. B. H. bars of W. Barrows & Son; £8 for Bradley's bars, and £8. 2/6 for Lord Dudley's. Medium bars are £7. @ £7. 10/, and common, £6. 10/ bars of W. Barrows & Son; £8 for Bradley's bars, and £8. 2/6 for Lord Dudley's. Medium bars are £7. @ £7. 10/, and common, £6. 10/ @ £7; sheets are £8. 10/ @ £8. 15/ for ordinary singles, £9. 10/ for doubles, and £11 for trebles or "lattens." Hoops run at about £7. 15/ for common, up to £13 for best, and cotton ties are £8. 10/, f. o. b. Liverpool. Galvanized iron is steady at £15. 10/ in London for 24 W. G., and other gauges in proportion. In iron rails there is scarcely any new business reported, and prices are decidedly "softer" at £5. 10/ @ £5. 15/. Old rails are not much sought after. Your buyers offer £4. 17/6 for D. H., c. i. f. Baltimore or Philadelphia, but holders here demand a minimum of £4. 18/9 for small lots. Flanges do not seem to be wanted at the moment. For wrought scrap £3. 10/ @ £3. 15/ is quoted inland, and £4. 5/ @ £4. 10/ ½1 ton, c. i. f. New York or Philadelphia, for heavy sorts suited for your markets. I note that at Hamburg 84/, c. i. f. Philadelphia, is offered for old flange rails, but without sellers at the price. Freights are a trifle easier, but are nominally unchanged, at about late rates. So soon as shipping rates take a downward turn, you So soon as nchanged, at about late rates. shipping rates take a downward turn, you may look for large consignments to your ports. Thousands of tons have been bought and are lying on the wharves at Cardiff and clsewhere waiting cheaper rates of freight. Lisewhere waiting cheaper rates of freight.

In Bessemer Blooms, 7 x 7 in. and 6 x 6 in., there is little doing on American account, the nominal quotations being £5. 10/ @ £5. 12/6 \$\mathbb{T}\$ ton. Steel Rails are decidedly dull, at £6. 2/6 @ £6. 10/. I hear of no new United States orders, but a large Canadian specification is out. A good little of the content of dian specification is out. A good Dutch or-der has gone to the Westphalian firms. The der has gone to the Westphalian firms. The government of Victoria has placed an order for 1000 tons of 48 lb rails at £6 % ton, f. o. b.

Antwerp, with Cockerill & Co., of Seraing, the thirteen British firms applied to being unwilling to take the contract under £6. 5/

If ton. It is not true that the Victorian Government have ordered "130,000 to 155,000 tons of Stell Rails." Tin Plates may be called weak and uncertain, despite a large be called weak and uncertain, despite a large volume of business and dear materials. Ordinary cokes are selling at 17/6 @ 18/ per box.

SWEDISH IRON

land, where the reserve stocks were decreased by nearly 7000 tons during January, prices have given way, and No. 3 is quoted for the first superior ditto, £12; ordinary hammered and rolled bar iron, £9. 5/ @ £10, all

	1 and 1		
0		No. 1.	No.
r	G. M. B., at Glasgow		48/
99		53.6	53/
	Langloan. "		55/
	Gartsherrie, at Glasgo	W 59/	52,
	Summerlee, "	58/6	51/
	Calder.	59/	52.
	Carnbroe, "	54/6	51/
	Giengarnock, at Ardro	88an 54/3	50/
	Eglinton, "	30 6	48.
	Daimellington. "	50.6	48/
¥	Shotts, at Leith		54
	Kinaeil, at Bo'ness		48/
1	Carron, at Grangemout	h 50 6	49/0

CLEVELAND PIG IRON is weaker in price, but I fancy is likely to acquire a better tone shortly, especially if the bank rate should be lowered. Last week's Connal's Middlesboro' stocks fell over 2000 tons, and the shipments were 15,126 tons pig and 9355 tons iron and steel, including three cargoes of steel rails. There are 117
furnaces at work in the district, including 37
on hematites, basic pig, &c. The total make
during January was 223,289 tons, shipments
71,458 tons, and total stock at end of the month 371,592 tons. Mr. William Whitwell says his firm is exporting large quantities of

No. 1	Founda	y	45/6	Mottled	
66 5	66	*****		Refined Metal	
66 2	66			Kentledge	
60	Forge.		42/		

have been irregular and weaker since the date of my last letter, owing to merchants underquoting makers. Sales are reported as low as 59/6 @ 60/ for mixed lots of Nos. 1, 2 and 3, but it would be difficult to repeat these, and about 61/@ 61/6 more nearly represents the market. Additional furnaces are being made ready to blow in, so that the 120 furnaces now going on hematites in different parts of England, Scotland and Wales will have their number increased. Current will have their number increased. Current

	No. z.	No. 2.	No. 2.
Cleator	68/ ==	67/	68/
Lonsdale	64/	63/	63/
Workington	64/	63/	62/
West Cumberland			
Lowther		63/	62/
Moss Bay		1.11	62/
Distington	64/	03/	62/
Harrington	64/	03/	62/
Solway		63/	63/
Maryport	64/	63/	62/

Last week's shipments were 14,937 tons of hematite pig, and 4812 tons rails and blooms. THE IRON AND STEEL INSTITUTE

has just settled its arrangements for the two meetings of 1882. At a meeting of the council on February 10, it was agreed to hold the spring meeting in London on May 9, 10 and 11, and the autumnal gathering at Vienna, &c., on September 20 and following days. The former meeting will be pretty much of a routine character, but the autumnal one will possess several new and attractive features. Besides Vienna, Pesth, the capital of Hungary, will be visited, and it is likely that there will also be an excursion to Gratz, in Styria, and to other places. The Gratz, in Styria, and to other places. occasion will be a good one for visiting Eastern Europe under exceptionally favorable circumstances.

THE LABOR MARKET has been relieved by the settlement of the

strikes which were in existence at the date of my last letter in Durham and Cleveland. This settlement has been effected by the promise of an advance of 7½ per cent., but the same men have since formulated a new claim for a further 12½ per cent., which will be submitted to the consideration of the Northern Board of Conciliation and Arbitration. The men remain at work in the meantime. time. Fired by the success of the Cleveland men, the ironworkers of West Yorkshire, Lanmen, the ironworkers of West Yorkshire, Lancashire, Derbyshire and Staffordshire have now given notice for an immediate advance of 7½ per cent., under the threat that they will strike to-morrow unless their mandate be obeyed. Besides this "prompt," they ask for additional remuneration with the advent of March. The matter is being discussed by the Board of Arbitration, and it is hoped that a pracific settlement will be As many of your readers are interested in Swedish iron, I may advantageously quote the gist of a letter just received from Gothenburg. The writer, himself in the business, states that the wonderfully mild winter has prevented the smelters from procuring their namal supplies of charcoal from the forests. It is pretty certain, therefore, that the production of pig iron, blooms and bars will be courtailed during the year 1882. Makers of Swedish bars and other finished iron are busy, some of the larger works having orders sufficient to last until midsummer. OrTHE BOARD OF TRADE RETURNS

Articles.	Quar	tities.	Values.		
	1881.	1882.	1891.	1882.	
Firearms, small, No Brass, manufactures	26,147	15,291	£29,013	£28,43	
of, not being ord- nance, cwts	9,586	8.140	22,026	31,26	
Railw'y carriages for passengers, No Railway trucks, wag-			11,138	20,410	
Coal, &c., tons	1,208,487 28 448	1,499,497	15,808	30,877 701,898	
Copper, unwt., cwts., Copper, wrt., cwts., Mixed or yellow metal sheathing.	13,439		77.853	60,23 101,28	
Hdw. and cuttery	25 337	26,528	71,944 278,120	88,909 324,586	
Plg, tons	68,971	103,961	199,991	295,576	
Bar angle, &c., tons. Railroad, tons	35,135	23,754 78,940	205,445	173,574 533,141	
Wire (except telegr. wire), tons Hoops, sheets, and boiler and armor	5,830	7,937	79,054	110,809	
plates, tons Tin plates, tons Cast or wro't, tons	17,500 16,689 18,561	25,710 23,154	200.860	311.954 415,403	
Old for remanufac-		22,817	268,343	330,956	
ture, tons Steel, unwright, tons Manifactures of steel	7,206 6,366	12,180	35.397 99,co8	46,897 173,635	
and Iron, tons Lead, tons MACHINERY AND MILL WORK.	3,570	1,412 2,843	67,485 59,414	70,202 44,906	
Steam engines			239,780	267,046	
Other descriptions Plate and pltd., &c.,			414,781	597,902	
and gilt wares Tel. wire & appara- tus connectd there			£4,865	23,323	
with. Tin (unwrt.), cwts	4,643	5,683	57,227 21,940	29,813 31,718	

TO THE UNITED STATES the leading items of interest to you were:

Alkali, owis. Hardware and cutlery. £ Hardware and cutlery. £ Hron—Pig, tons. Bar, angle, rod, &c. Railroad, all, tons. Hrops, sheets, plates, Roll, cons. Cast or wrought, tons. Gold, kons. Gold, kons. Gold, kons. Gold, kons. Gold, kons. Gold, cons. Gold, co	Articles
266,033 48.574 31,460 2,633 27,533 37,733 3,733 3,955 5,821 3,430 1,830	Month of Jan., 1882.
267,017 42,709 16,954 1,085 7,981 7,981 7,981 3,775 5,534 3,775 5,534 3,775 5,534 3,775 5,534 3,775 5,534 3,775 5,534	Month of Jan., 1881.
245,678 47,633 88,540 86,860 86,860 86,860 87,732 8,773 87,724 18,614 18,614 18,719 17,324 18,614 18,3467	Month of Dec., 1881.

The average prices \$7 ton of some of the leading lines sont you were: pig iron, £3.

4/1'4; iron rails, £5. 10/10; steel rails, £6.

10/7%; old iron for remanufacture, £3.

18/10, and unwrought steel, £3. 0/7%. £.

Schmitz & Co., of Middlesboro', have compiled the following useful table:

Countries.	Total Exp'ts, 1851.	Total Exp'ts 1882.	Inc. upon 1881.	Dec. upon 1851.
	Tons.	Tons.	Tons.	Tons.
U. S. America	47,551	110,557	68,006	
B. N. America	4,677	4,876		
India	26.394	25,856	9,462	
Australia	15,253	26,440	11,196	BERERE
B. South Africa	1,552	3,020	2,368	******
Russia	662	1,221	559	
Germany	4.854	10,300	5.545	
Holland	26,359	33.712	17.343	
Belgium	6,200	8,550	2,359	
France	13,229	37,459		
Italy	6,111	5,814		297
Turkey	937	854		7.3
Sweden & Nor		5	5	
Denmark	2			1
Spain & Canaries.	1,700	2,153	853	
Egypt	1.873	213		1.66z
Brazil	3,992	6,137	2,145	
Peru	265	5	-4-43	260
Chili not	105	478	373	
specified	55,787	57,721	8,934	
	197,112	317,390	132,570	2,292
0	Net inc	rease	120,270	

PRICES OF METALS, ETC. I take the following from the prices cur-

0	Lead ore, picked, z cwt. kegs	18	0
-	Pig lead		I
t			
g	Antimonial lead		0
y	Sheet lead	1.5	3
-		16	0
		18	C
-	Lead encased tin pipe	33	Of
Θ	Composition gas fubing	18	O
8	Lead wire, to No. 12, 28/, 13 to 16	0.0	3/
	Hand leads, 24/, deep sea leads		2
0			- 01
8	Lead nails	40	- 04
7	Tin pipe	136	- 01
2	Bar lead (3 lbs. and upward)	15	
-0	A CALCULATE DEACTER		0
	Hardened shot	18	I
	Antimony	54	O
	Tin in ingots	XIO.	- 60
	Tin, bars in 4 cwts. barrels.	117	- 60
3	2 cwts. barrels	117	E
3	Tin Plates, Coke I. C., per box		3/6
	" Charcoal I. C., per box		1/6
	Plumbers' solder	56	00
9		66	ec
-	Brass solder, per lb 81/3d.	109	
,	Gen, red lead (orig. packages) Reduced No. 1 '' No. 2 ''	16	10
,	Reduced No. 1	15	10
L	" No. 2 " No 3 " Glassmakers' red lead	13	CC
)	Olegania kanal and load	14	C.0
	Pure English flake litharge. 5-owt. casks		00
	Pure English nake hinarge, 5-owt, casks	27	5
	Pure English powdered litharge	18	5
	300d foreign nake ntharge	17	00
	" powdered	18	IC
	Orange lead, powdered	27	10
	Der white load	39	00
١	Genuine ground white lead	19	10
	No. 1	21	10
	No. 2	19	10
	Sheet zinc, No. 9 upward	17	10
	V. M.	31	35
	Zine nails, 1 upward	28	5
	Hard spelter	12	10
	Remelted spelter	15	00
ı	Remelted spelter	85	00
	Taylor's	70	00
		150	00
		20	00
	-		
	FROM TOTAL ST		

the company stand in need of in Austria. Coal has been influenced very little by the cooler 38. an advance of 75 to 1 franc, and Spatter 46.55 of francs per 100 kg. Iron.—Great activity prechant. In the Haute-Marne great efforts are making to execute all the small orders daily arriving, together with the largar ones. From the Meurthe and Moselle we hear that at Longwy Gray Puddle Pig sells at 7.25 francs. At the North prices are firm, with an upward tendency Merchant Iron commanding 18.50, and Beams at 19. The demand for Sheet Iron and large plates is also good in the district. This relates equally as much to Chains and Bolts. At Hammout, car wheels are now made after the Brunon system. This Sheets are wanted at 25.50, which is an advance for the week of 1.50 francs. A Belgian company from Charleroi has bought the Sheet Iron Rolling Mill at Louvroil, formerly the property of the Northern Rolling Mills and Steel Co. Great improvements are to be introduced. In this city a splendid building season is in prospect, capital being diverted from the Stock Exchange since the panic and going instead into real estate and building. Consumption of Iron will, therefore, be unusually large at Paris this year. Merchant fron now commands at francs; Beams and Corners, 22; large Plates, 25, and Common "heets, 29. The Northern Railroad has just sold a large proves the firmness of Iron among us. Coal.—There is a good demand and great steadiness; efforts are made to increase production in France.

TRIBLETT.

BELGIUM.

BELGIUM.

(Revue Universelle.)

BRUSSELS, Feb. 12, 1882.—Iron.—Advices from all parts of the country are still satisfactory, orders dropping in with great steadiness. Pig from is becoming scarcer, the more so as it appears that Luxembourg has pretty much sold out for the current year. As for finished fron, the upward course of prices has for the moment not only been arrested, but there has even been a partial decline, and, in spite of its comparative scarcity, even Pig Iron has been weaker, prices having yielded in a great many instances 20¢ 21 cok g, bringing the range down to 5.80 @ 6.80 francs for Common Pig. Merchant Iron, for which in some instances as high as 14.50 francs 20 to kg, was paid cannot be quoted over 14 francs to-day. Beams are sustained at 15, and Corners at 15.50. Common Sheets are worth 20 francs; ditto for boilers, 22, and thin, 27. It is difficult to explain the flatness which has produced this slight recoil; we believe it to be merely a temporary reaction from too rapid an advance, and on that ground do not attach great importance to it, as we do not see that the iron situation has undergone any unfavorable change anywhere in neighboring countries. We shall, however, have to be prepared for more frequent fluctuations from now forward, for, as we have mentioned on a former occasion, to some extent speculation has entered the Iron market, first in Silesia and latterly in Belgium. A serious prolonged decline we do not apprehend, however, because the aituation is too good to be permanently affected in an unfavorable sense in the near future, unless something not now to the foreseen should occur. Coal for domestic use has been looking up during the late cooler weather, but we are so near spring now that we do not expect much of a demand under this head. Coal for industrial purposes remains steady at 11 @ 12.50 francs.

GERMANY.

Steady at 11 @ 12.50 France.

WERMARY.

(Borseahalde.)

Handeng, Feb. 10., 182s.—Iron.—We are reported from Dortmund as under: "The situation of the Iron industry continues to be a very solid one in this district; prices are firmly sustained at paying rates. There is, however, not much activity displayed; producers have received a good many orders ahead, while consumers have secured requirements in advance. There seems to be no fear of receding values, since the position of Iron and Steel has nothing artificial in it so far, being based on actual demand. Biast furnaces in the lower Rhenish and Westphalian districts, as well as in those of Siegen and Nassau, are abundantly provided with Fig. Iron orders. Their greatest activity, as may be supposed, centers on Gray Pig for rolling mills and steam forges. The rolling mills are under heavy engagements, especially in furnishing Sheets for vessels and boilers, Rod Iron, drawn Wire and Iron Sleepers. The active demand for rolled Iron and Wire has caused the resuscitation of the old Alemanna-Horberg Works, at Langendreer, out of operation for years past. This concern is now under the management of Funke, Borbet & Co., who for the moment have blown in only eight pudding furnaces, but this will all be notably extended, for a Martin-Siemens Steel manufactory is to be added to the works. Both the Bessemer and Thomas Steel works are loaded down with orders, mostly for Steel Bails, but also for some Hooks and Axles. Satisfactory occupation is reported among the boiler makers, machinists, foundries and car and locomotive shops. This relates equally as much to the hardware and tool people at Hagen, Haspe, Milspe, Altena and Flettenberg, &c. We may, therefore, look complacently upon the general iron and Steel branches in this vicinity. Coat of overy grade is active, and so is Coke. At Dusseidorf Pig Iron or sells rapidly. Rolling mills have laid in stock all the way into the third quarier. The Moselle and Sarre is steady, especially for experial months in advance. They do not c

Drsseldor, Feb. 9, 1882.—Iron.—Most of the rolling mills in Westphalia and the Rhenish provinces have formed a combination to maintain Merchant Iron at provailing rates. They have come to this resolution as a check upon the speculative element; at least this is the excuse they put forward. Orders for locomotives from abroad are so frequently received nowadays in this country, that it may be of interest to mention our capacity of production as compared with neighboring countries, Austria being a competitor. There are at present in termany sixteen locomotive works, turning out 1600 to 1900 large locomotives annually, the largest being A. Borsig, at Berlin, and George Egerdorf, at Linden, (Hanover), turning out 500 to 300 manue each, and four works turning out 500 to 800 mml lones per annum. Austria possesses four works, turning out, together, 350 to 450 locomotives per year, and Switzerland one producing yearly 40 to 50 locomotives. In Upper Silesia there is great firmness in Iron without much doug. Herchant Iron and Sheets are wanted, and Puddle Pig is tolerably well sustained. The German National Bank, of Bremen, again declares a dividend, for 1881, of 40 %, the same as it did in 1880, the chief profits of this institution being derived from its Rio Tinto Copper mining shares. (Cologne Gazette.)

(Hessenauer & Co.)

Colombo, Jan. 9, 1882.—Plumbago.—Since our last report the market has been lifeless. We quote to-day in rupees, \$\geq\$ ton: Fine Lump, 130 & 170; Ordinary ditto, 132 & 140; Chibs, 70 & 75, and Dust, 50 & 55. From October 1 to January 5 there have been shipped to England 29,815 cwk., to Australia 1c4, and to the United States 39,487 cwk.; together, 69,406 cwk., against 31,542 the previous year, 32,075 in 1880, and 23,126 in 1879. Exchange, six months private bills, 1/834.

(Dummler & Co.)

(Dummler & Co.)

BATAYIA. Dec. 24, 1881.—Tin.—The next sale is to come off on the 27th inst., to be followed by one on February 28, 1882, and on April 23, each of 73,000 to 14,000 plculs Billiton. Metals.—Swedish Iron has been done at 0,25 guilders, and retail sales have taken place at 10,50. English Iron.—No business has been transacted in either Bars or Sheets; only a small quantity of Hoops has been taken at 6; ½ Steel has been done at 9. Wire Nails are at 10,50 @ 11. Copper Sheathing and other classes of metals without sales. (*bal.—Large arrivals, which have mostly gone to consumers. Exchange, 6 months, London, 11,77½ @ 11.80.

(Schmidt, Kustermann & Co.)

(Schmidt. Kustermann & Co.)

Penang. Jan. 3, 1832.—Tin.—Receipts since our report of Dec. 21 have been comparatively insignificant, not more than 4500 piculs having been placed on the market. The latter opened at \$33.45.

® \$33.50 and gradually rose to \$34.50. since when it receided to \$42.50. closing firm at this figure. Total sales for the fortnight, including resales, 10,600 piculs, of which 3500 were taken by Europeans, and 6500 by Chinamen. Most of these purchases were speculative. Stock in Basar may be valued at 400 piculs in first hands. Exchange has been quite firm, declining slightly toward the close. We quote, 4 months' sight, London, 3/9½, bank rate.

CHILL.

(Weber & Co.)

(Weber & Co.)

Valparaiso, Dec. 9, 1881.—Copper.—Sales have been active at \$1.85 \$ \text{ quintal}, in response to fivorable accounts per cable from Europe, some 15, 145 quintals changing hands. Nitrate.—Much caution has been observed by buyers, because such a large amount of Nitrate has been shipped. Sales have thus been restricted to the small quantity of 52,000 quintals at \$3.05, 96 %, with 1½ \$ additional. Charters have been made to the extent of 3300 tons for Europe, and 2900 for the United States. Export is enormous, being 30,170 tons in November, and a still larger amount was still to be shipped on December 1, but many vessels cannot be got off till January. because the Iquique Railroad cannot convey all the Nitrate that was to go on board in December. Taltal has got a better supply, but present low prices do not encourage production. All the Aquas Blancas works are closed, and Antofagasta is shipring the balance it has got. Freight to New York, 48% to Hampton Roads, 51%. Coal.—Arrivals are in excess of current requirements, and even the ruinous rates prevailing are no temptation to buyers. Ortill sold for 2%6, and Newcastle and West Hartley went at 28%. Exchange has risen to 35% \$\text{Q}\$ dollar.

Liability of Railroads for Discrimination in Freight Charges.

In the case of John Hays & Co. against the Pennsylvania Railroad Company, which was tried at Cleveland last week, Judge Baxter delivered a very important and interesting charge to the jury. The case was one brought by the plaintiff, who was formerly a large wholesale coal dealer of Cloveland, against the railroad company for \$100,000 damages, on account of unjust discriminations in freight charges, the plaintiff claiming that lower rates of freight were charged the Ohio and Pennsylvania Coal Company for bringing coal to Cleveland than was charged the plaintiff for transporting coal over the Cleveland and Pittsburgh Railroad, from the Carbon Ridge and other mines in Somerville, O., to Cleveland, and, also, that dock privi-O., to Cleveland, and, also, that dock privi-leges granted to other shippers were refused to the plaintiff, although he was equally en-titled to them. These discriminations were alleged to have occurred between April, 1871, and September, 1879. The case had been bitterly fought on both sides, and as the charge of the judge is of general interest from the nature of the case, a full synopsis is appended.

duties of railroad carriers may aid you in the discharge of the duty which the law imposes upon you of correctly deciding upon the facts, a few general observations touching the matter will not, I trust, be considered as inappropriate. Railroads are quasi-public highways. If the Legislature of your State were to enact a statute purporting, on any pretext whatever, to authorize one or more persons, either with or without compensation, to take private property and appropriation, to take private property and appropriate. ROTTERDAM, Feb. 7, 1882.—Tin.—Since the late sale at 65.875. Banca has risen to 65.25, while May delivery of Billiton has been paid as high as 65.50 guilders the 50 kg. Even at this figure little is offered. Feb. 9.—Speculators drove the price up to 60.50 yesterday, but as consumers decline touching the metal at these inflated figures, a reaction has ensued to-day, Banca dropping to 67.75 and Billiton to 67.50, at which quotations both are freely offered, without buyers.

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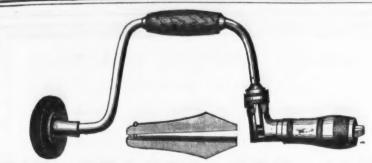
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(Austrian Trade Journal.)

VIENNA, Feb. 10, 1882.—Iron.—The situation in this country remains a highly satisfactory one. Most of our works have secured orders enough to last then beyond the first quarter, and some for all the current year. Great animation is notice the same time remaining on the whole steady, except Copper, which has given way a trifle. We quote the latter at the close: Chill Bars 107,50 @ 170; Ingots and Slabs 177,50; Best Selected, 165, and pure Corocoro Ore, 172.50. Tin.—Banca,

283



BRACES FOR

After having made almost every kind of a Bit Brace and tried them on the market, we find that our BARBER IMPROVED BRACE, as seen in this Cut, is the only one which gives universal satisfaction. During the past six months we have made some slight changes on this Brace, which remove all objections to it and make it absolutely perfect. We are aware that other Braces are sold at a less price, but they are also made at a less cost. Everything which goes into the Barber Brace is of the best and most expensive quality, and one of them will outlast six of any other kind. The Sweeps and Jaws are of ateel, the Head of lignumvite and Revolving Handle of rosewood. It is highly polished and heavily nickel plated. The Jaws will hold, without any fitting, Tool Shanks of every shape, including Round Twist Drills. When furnished with the Ratchet Attachment, for boring in places where the Sweep cannot be revolved, it is the only Brace which will answer that purpose. We have not changed the price for many years, and do not anticipate any change in the near future; but from year to year we have been adding to the quality so as to make the cost to us double what it was ten years ago. We have recently added to our manufacturing facilities, and are now prepared to supply the world with Braces. After having made almost every kind of a Bit Brace and tried them on the market,

LIST PRICES,

No. 10—14-inch Sweep, per dozen...\$33.00 No. 14— 6-inch Sweep, per dozen....\$21.00 No. 11—12-inch Sweep, per dozen... 30.00 No. 12—10-inch Sweep, per dozen... 27.00 No. 13— 8-inch Sweep, per dozen... 24.00 No. 33—10-inch Sweep, per dozen... 36.00 No. 33— 8-inch Sweep, per dozen... 33.00

MILLERS FALLS CO., 74 Chambers St., New York.



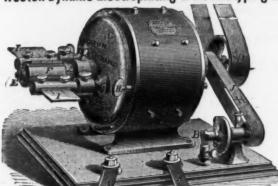
Masons and Firemen.

The shingle on this side being left out, the operation of the Bracket can be easily seen. It slides in between two shingles, with the foot slightly raised, two ears going under the shin-gles and two over; when the foot is pressed down the ears take a lever nip

MADE BY WILDER MFG. CO.,

FOR SALE BY HARDWARE DEALERS GENERALLY, WILLIAM BLAIR & Co., Chicago; HOWELL, GANO & Co., Cincinnati, Wholesale Western Agents.

HANSON & VAN WINKLE, Sole Agents for Weston Dynamo Electroplating & Electrotyping Machines, Newark, N. J.



For Nickel, Bronze, Brass, Copper and Silver Plating. Over 1000 machines in use.

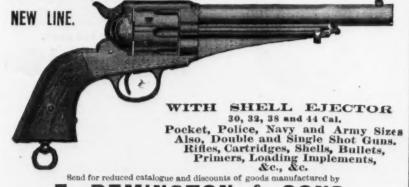
Are used by all leading stove manufacturers.
Experienced men sent to put
up machines and instruct pur

up machines and chasers.
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We call attention to infringe
ments of the Weston Machin
in which Automatic Switche
are used to prevent change o
current. The Weston Co. ar current. The weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these ma-chines will certainly lead to great loss to parties purchasing or using them.

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THE GEM CARPET STRETCHER.



Patented June 8, 1880,

The Best and Cheapest in Use. .-Tack the carpet at one side of the other side, and with the Stretche

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CHARLES H. HOWELL

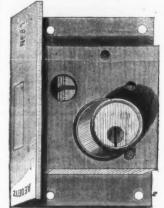
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THE FORSYTH SCALE CO., YOUNGSTOWN, O., Manufacture a full line of

FORSYTH'S STANDARD SCALES Counter, Portable, Dormant,

Stock and Hay, and R. R. Track

SCALES.

Call Special Attention to their SUSPENSION HAY & R R. TRACK SCALES.

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Exhibitions of 1862, 1865, 1867, 1872, 1873, and only award and medal for Noiseless Steel Shutters a Philadelphia, 1876; Paris, 1878, and Melbourne

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STEEL SHUTTERS. FIRE AND BURGLAR PROOF. ALSO IMPROVED ROLLING WOOD SHUTTERS,

Of various kinds. And Patent METALLIC VENETIAN BLINDS.

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The "Salem" Elevator Bucket. FIRST PREMIUM AT THE

MILLERS' INTERNATIONAL EXHIBITION.

What Users Say of It: We consider the "Salem" the "Best in the market." What better testimonial can you have than the size and frequency of our orders? The Link Belt Machinery Company, Chicago.

We find the "Salem" to be first-class in every respect, R. D. Hubbard & Co., Mankato, Minn.

We like the "Salem" Bucket. Ship us 55 more at STRAITSVILLE CENTRAL MIN-ING Co., Columbus, O.



tion in every respect than any other Bucket SAMPLE MAILED FOR

It is nearer Perfec-

15 cents (stamps.)

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Philadelphia,

Cast Iron Pipe

FOR WATER AND GAS,

Lamp Posts, Valves, &c., Mathew's Pat. Anti-Freezing Hydrants. 400 CHESTNUT STREET.



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Screw Wrenches

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Our Genuine Wrenches are made watraight bars, full width and enlarged jaw, hing ribs cast inside, which strengthen the hand give a full bearing on front of bar. Thimprovements, in combination with our retrule, made with double bearings, an interval, which is shank and resting again.

L. COES & CO.,

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OUTSTRIPS ALL COMPETITORS.

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Barn Door Hangers, Rolls & Rail. Sliding Door Rolls and Way. Butterworth Window Springs.

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Foot Scrapers. Cistern Tops and Covers. Stair Rail, Store and Fancy Brackets. Harness Hooks and Brackets.

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Braiding Machinery for Silk, Worsted or Cotton, and for covering Whips and Telephone Wire. Flush Pulls, Small Anvils, Dumb Bells. Fine Castings a specialty.

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fully compete in manufacturing, mining, or in commercial pursuits, without the use of railroads. They have pretty much superseded any other means of inland transportation; and if their manipulators are authorized for and if their manipulators are authorized for any reason, sinister or otherwise, to invidi-ously discriminate against one man or com-munity in behalf of other and rival interests, they would be in possession of a power which, skillfully exerted, would demoralize trade and extinguish honest competition to the impoverishment of those they disliked and the enrichment of their favorites. And if, by change sellish and ambitious men should by chance, selfish and ambitious men should ever acquire control of any considerable number of competing roads, they could, by disfavoring the refractory and rewarding the obsequious, largely influence both business and public sentiment within the radius of their influence, and thus increase their indi-vidual fortunes and strengthen their power.

their influence, and thus increase their individual fortunes and strengthen their power.

"I am glad to be able to say, gentlemen, that railroad corporations are invested with no such dangerous power. Their officers are, in a qualified sense, trustees for the public as well as for the shareholders, and are in law as well as in morals bound to execute the trust imposed npon them by their charters, so as to secure to everyone applying therefor equal facilities in the use of their roads, and upon the same terms. You are to decide in this case whether there has been any discriminations made against this plaintiff. It is conceded that the schedule freight rates for 1876 from Salineville to Cleveland were \$1.60 per ton for the first 8000 tons, forty oents less on the furth 8000 tons, fifty cents less on the fourth 8000 tons, and sixty cents less on the fifth 8000 tons, and on all coal in excess of the last amount transported for any one man or firm. The effect of this rebate was to give to the heaviest shipper better rates than shippers of less amount enjoyed. Is such a discrimination authorized by law? rates than shippers of less amount enjoyed. Is such a discrimination authorized by law? I wholly dissent from the proposition that it is. If such a rebate is authorized in shipping coal, it is in transporting wheat or anything. coal, it is in transporting wheat or anything else transported in large quantities. The effect of such a policy would be to add to the strong and crush out the weak. If you find higher rates had to be paid by the plaintiffs than were exacted from others, such a dis-crimination is wrong to the plaintiffs, and they are entitled to reclaim what they over-paid with interest." paid, with interest.

After briefly referring to the claim that the plaintiff's business had also been injured by the loss of the dock privileges, and stat-

same points, for one man, or class of men, | ing that all customers were entitled to equal at a less rate than they exact from other and competing interests; if they could lawfully require one man to pay fifteen cents per bushel for the transportation of wheat from Cleveland to New York, while they did the Cleveland to New York, while they did the same service for another and rival merchant for ten cents; or bring hither merchandise for certain favorite firms and refuse to carry for others, they could make and unmake the fortunes of whomsoever they chose. Railroads, whose capacities for good and evil were not fully comprehended a quarter of a century ago, are now regarded as essential to the rapid development, and prosuperity of the high rates and than recovered back the overthe rapid development and prosperity of the country. No one can at this time successfully compete in manufacturing, mining, or in commercial pursuits, without the use of railroads. They have pretty much superseded

Although the overcharge may have been the legitimate cause of failure, that branch of the subject is now withheld from your con-sideration. There are three questions to be sideration. There are three questions to be considered by you—the overcharges, the ex-tent of the overcharges, and the amount of the overcharges.'

> Power and Speed of Torpedo Boats .-The power required to propel boats of different sizes is far from constant at all speeds. It happens that Messrs. Jarrow & Co., of England, recently had under trial two torpedo boats of different sizes, and as the results may be of interest to our readers, we annex the following facts: The larger boat was 100 feet in length and 12 feet 6 inches broad, having a displacement of 40 tons. The smaller one was 86 feet in length and 11 The smaller one was 86 feet in length and 11 feet broad, having a displacement of 33 tons. To drive the 40-ton boat 15 knots required 248 indicated horse-power; 33-ton boat 15 knots required 277 indicated horse-power; 40-ton boat 18 knots required 394 indicated horse-power: 33-ton boat 18 knots required 390 indicated horse-power; 40-ton boat 21 knots required 540 indicated horse-power; 33-ton boat 21 knots required 510 indicated horse-power.

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We think your Door Spring is the best in the narket. We sold more of them last season than all therestyles combined, and they have given universal ARNOT & LEEMHUS, Freeport, Ill.

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H. W. WILCOX & CO., Lemans, towa. ce with Jobbers solicited. Full it Free on application. Address L. M. DEVORE, Freeport, Ill.

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We offer to the trade the following low prices r SPOT CASH to close out a surplus stock:

.coc dozen Loose Pin Butts at 6c and ro discount;

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.coc Silver Tipped at 7c discount; Wire

Stran wrought Butts, at 50 and 10 discount; Screws, 30 and 10; Locks, 50 per cent. and some at 50 and 10; John Rubber Hose at \$3.50 per 50 feet, Couplings included; \$25,000 worth Stamped Tin Ware at 60 per cent. discount.

Above are subject to quantities on hand at time of receipt of order.

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New Upright Power Drill Presses; swing 22 inches, back geared, quick return motion; large steel Spindle, balanced in column; revolving Arm and Table; cut Gears; Pulleys, 9 x 2½; a strong brace extends from base to column, stiffening it at point of greatest straig.—a new feature. Weight, 100 lbs; hight, 6 feet. Price, 820. Small size, swing 13 in., lever feed, three speeds; tight and loose pulleys (no countershaft required). Price, \$35.

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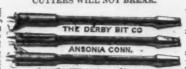
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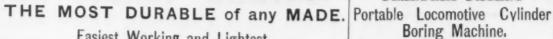
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Hammer's Adjustable Clamps.



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NEW pattern Heavy Screw Clamps;
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For sale by all the principal Hardware dealers. Send for Price List.

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FOR SALE, At New England Machinery Depot, 308 North Third St., Philadelphia, Pa. Horizontal, Vertical and Locomotive Tubular Boiler, from 3 to 60 H. P., in stock and larger to order. Engines all sizes. Pumps, Heaters, Injec-tors, steam and hand Brick and Mortar Hoists. Boiler Test Pumps. The new Gravity Coffee Roaster. All of the above constantly kept in stock. Send for circular and price list. The Sugar Maker's Friend Twenty-five per cent, more sugar and a better quality from

inner end provided with longitudinal edges, fins or flanges, whereby the spout is secured to the surface of the tap or bore, and between the same are chambers for the free flow of sap without obstruction from the entire length of the bore; a Sap Spout with its inner end provided with a chamber of smaller dimensions around its neck for the free flow of sap between the outer packing and inner bearing; a wire bucket hanger paracemals, or one PREMANENTLY attached to, or one cast ENTEGRAL with, a Sap Spout; a Sap Spout with its extreme outer end provided with a drop-lip or nib on its under side for facilitating the quick discharge of sap from out the spout into the bucket—all of which are some of the essential points patented or owned by me, and their infringement by manufacture, sale or use will receive the full penalties of the law. Suits for damages have aiready been brought against leading infringers, and others will surely follow unless voluntarily settled.

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BROWNING, SISUM & CO., 85 Chambers St., Manufacture
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IMPROVED HOWE SCALE

THE ONLY SCALE HAVING PROTECTED BEARINGS.



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PROVIDENCE STEAM TRAP COMPANY, Manufacturers of Newton's Patent Steam Trap, Compensating Valve, Oscillating Furnace Bars, and Furnace Economisers

To Manufacturers, Bleachers, Dyers, and all Users of Steam: We wish to call your special attention to our Patent Steam Trap, acknowledged by practical engineers and manufacturers to be the best, simplest, most effective and durable Trap ever brought before the public. The simplicity of this Trap consists of doing away with all expansions and contractions, no glands or stuffing boxes, or bolts of any description required: no compound cylinders and no copper rods. The cover can be removed at any time to see it work; and if required the discharged water can be elevated from two to thirty feet, so that it can be used for other purposes. They will last from thirty to forty years. As regards frost and snow it makes no difference, as we have had and still have one working in the open air at Washington Mi'ls, Lawrence, Mass., and it has done its work well, never having had any trouble with it, and bids defiance to all weather. That they have been thoroughly tested can be seen by the testimonials given below, of the few that have come to hand: TESTIMONIALS.

Washington Mills, Lawrence, Mass., November 18, 1880 Mr. R. Newton.—Dear Sir: The Steam Trap we bought of you last August works admirably. Please send us another as soon as possible. Yours truly, JAMES B. SINER, Mech. Supt.

Office of Washington Mills, Boston, December 24, 1880.

Providence Steam Trap Co.—Gentlemen: Please forward to Washington Mills as on as possible six (6) % Inch Traps and send bill to me.

Yours, truly.

HENRY F. COE, Treas.

Clyde Bleachery and Print Works, River Point, R. I., January 17, 1881. Mr. R. Newton.—Dear Sir: The Steam Trap we had of you is in successful and very satisfactory operation. Its simplicity in construction and undoubted durability will commend it to all who are in want of a superior Steam Trap. We shall order more when in need of any. Yours, truly,

S. H. GREEN & SONS.

Kendall Manufacturing Co., Previdence, R. I., Feb. 1, 1881.

A. & W. Sprague Mfg. Co., Cranston Print Works, R. I., Jan. 15, 1880. Mr. Robert Newton—Dear Sir: The Steam Traps we bought of you work first-class and give every satisfaction, and appear to be very dutable. We think them the best Steam Trap that we have ever had. When in want of more will write you.

I remain, yours, truly, THOMAS BRISTOW, Sopt. Cranston Print Works.

Rendall Manufacturing Co., Providence, R. I., Feb. 1, 1881.

Providence Steam Trap Co.—Gents: We have used one of your Steam Traps for some time and would say that we flud it gives perfect satisfaction.

Yours, truly, NICHOLAS SHELDON, Treas.

Providence, R. I., December 18, 1881.

Mr. Newton.—Dear Sin: We have your Steam Trap working satisfactorily and Yours, very truly.

B. COLLINGHAM, Supt. Atlantic Milks

ROBERT NEWTON, C. E. M. E., Inventor and Patentce, Providence, R. 1.

PATENT OSCILLATING FIRE BARS.

We wish also to call your attention to R. Newton's Patent Oscillating Fire Bars, which for durability, economy and application are acknowledged by all practical engineers that have seen them up to the present time to be the best ever brought before the public. This invention the patentee has labored at more or less since 1851. These bars have long been wanted, and their use will at once prove their efficacy as an economiser of fuel and labor. These bars can consume from four to twenty-six pounds of coal per square foot of grate, per hour, and not warp; and the apertures can be kept clean so that they can get a regular supply of oxygen, which is the lifegiving power of caloric. They can be applied to all kinds of boiler surfaces (except vertical), and can be fitted to the furnaces in about five hours. Testimonials can be forwarded, if required, to show that they are now in use in some of the largest firms in the world.

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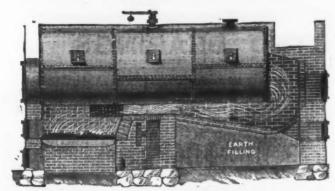
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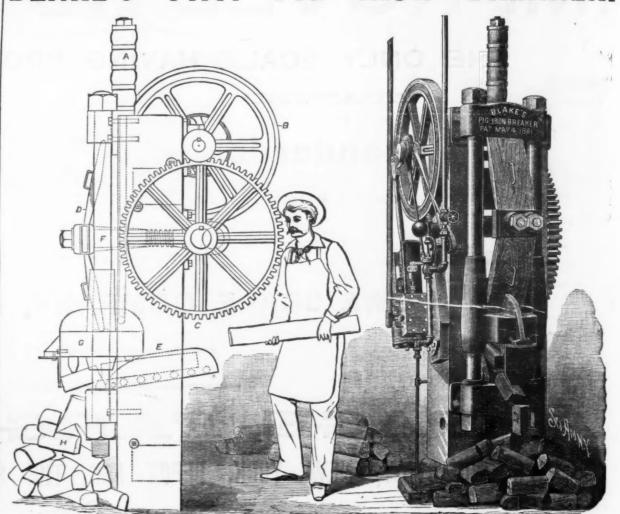
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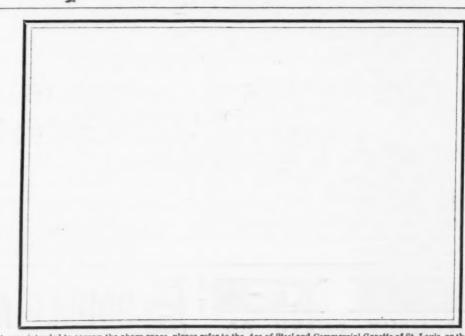
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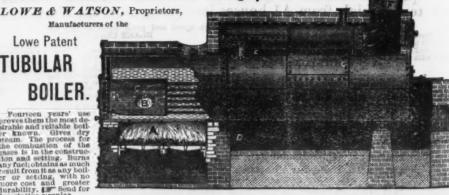
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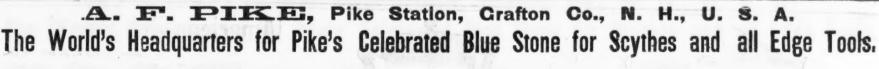
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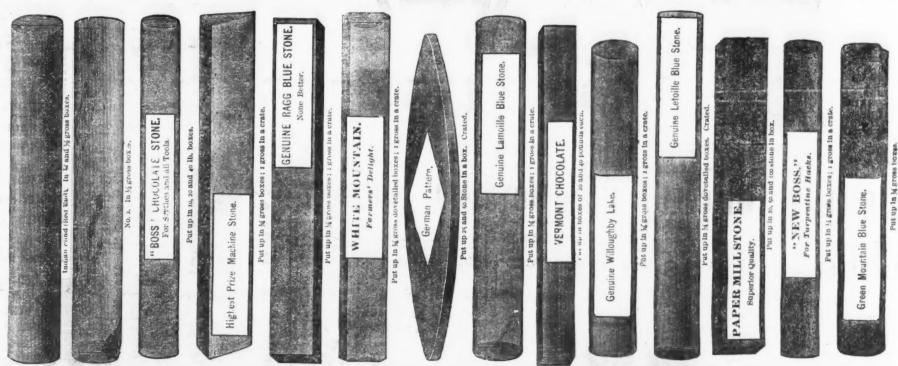


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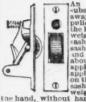
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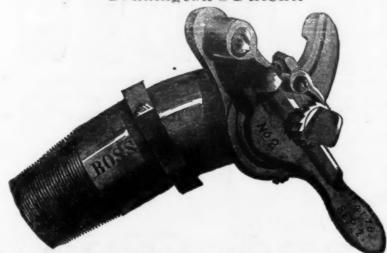
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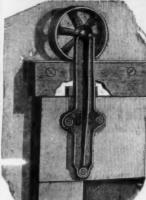
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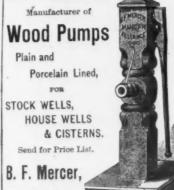
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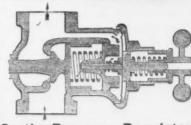
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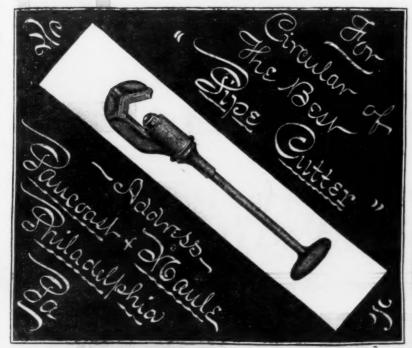
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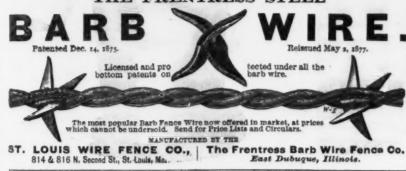
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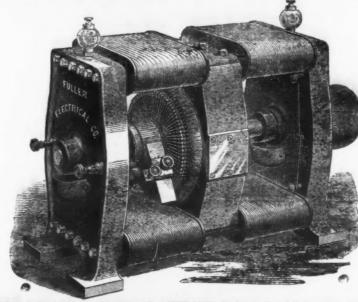
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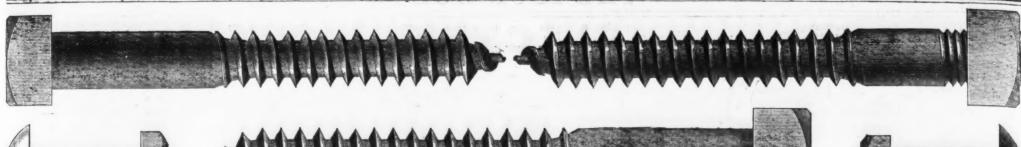
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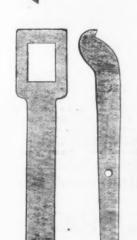
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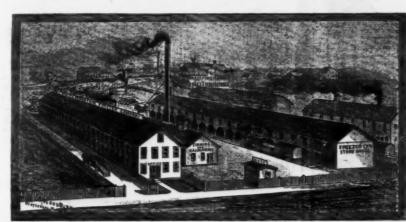








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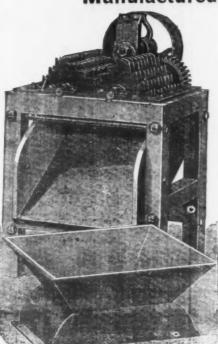


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Gustier Steel Department of Cambria Iron Co.,
Johnstown, Pa.
Johnstown, Pa.
Johnstown, Pa.
Harrison Wire Co., St. Louis, Moo.
Hers helm 1., 105 John, N. Y.
Howard & Morse, 25; Pullon, N. Y.
Prentlas tieo, W. & Co., Holyoke, Mass
Pergins & Choale, 23, Nassau, N. Y.
Trenton Iron Lo., Trenton, S. J.
Washburo & Moon My. Co., Worcester, Mass.
Worcester Wire Co., Worcester, Mass.
Wire filoth, Detroit Mich. Worcester Wire Co., Worcester, Mass.
Wire floth.
F. T. Barum, Detroit, Mich.
Wire foods, Manufacturers of.
Gibert a Bennett Mrs. Co. 224 Pearl, N. Y.
Wire Nalls,
Blake & Johnson, Waterbury, Conn.
Piold A. & Sons, Taunton, Mass. Blake & Jourson,
Fleid A. & Sons. Taunton, Mass.
H.P. Nail Co., Cleveland, Olido.
Wire Hope, Iron and Sucer, Makerson
Broderick & Bascom, St. Louis, Mo.
John A. Roebling's Sons Co., Ity Liberty, N. Y.
Lucceen A. & Son, & Louis, Mo.
Wire "tretcher"
Samson Novelty Works, De Kalb, Ill.
Wood-Working, M. achiery,
H. B. Smith Machine Co., Philadelphia,
Royers, F. & Co., of Liberty, N. Y.
B. & Wood-Machine Co., of Liberty, N. Y.
B. & Wood-Machine Co., of Liberty, N. Y.
Wenchos, Monarchases, of Co., State Voc. W reachos. Manufacturers of Eemis & Call Hdw. & Tool Co., Springdeld Mas ... 0741 Coss A. O. & Co., wo recester Mass. ... 2 Cos L. & Co., Woroster, Mass ... 3 Girard Wrench Mig. Co., Girard, Fa.

NEW YORK W March I, 1882.

METALS.	All Mandrei Drawn Tubes un pound advance.
	nd Plain
R4N、一DTT. Bars, I to 1½c. 単 カ; Sheot, Ha Hoop and Soroll, 1½ to 7½c. 単 カ; provided, that no of the above Iron shall pay a less rate of duty th 35 per cent. Fig. 57章 ton; Folished Sheet, so. 単 Wrought Scrap, 26章 ton; Cast Sorap, 26章 ton. Ra read, 7ec. 単 1so b. Boiler and Plate, 1½c. 単 b.	Trench and Extra Patterns. French and Extra Extra Patterns. French and Extra Pattern
read. 700. Wise b. Boiler and Plate, ilic. W D.	6 Per cent
American Iron. Fundry No. 1x	ce if Per cent
Cary Forge	STEELDUTY: Bars, Ingo
Glengarnook. \$7.00 @ 2	above II, 30 # h; over II, 2540 Rallway Bars, 1540 # h. Rall IC # h. Provided that Metal
	from Iron by the Bessemer or whatever form or description
fron, a mill	For American Steel see quota
Old Rails D H	Best Cast. Extra Cast.
Scrap. Wrought Scrap # ton, from yard	l. Swaged, Cast
of the round and square	e derman Steel, Best.
Wrought Scrap, to arrive. Bay I rou from Store. Common ir.n: % to r in. round and square. i to fin. round and square. % to r in. round and square. % to r in. round and square. % to sin. round and square. % to si	Sheet Cast Steel, 1st quality 2d quality
Bods—Mand 11-16 round and square, P B 3.1 Bands—1 00 6x3-16 to No. 13.	O ANTIMONY
Common P G	Bar
97 to 94 10 m 11/0 5 a	Bar Pipe Tin Lined Pipe. Sheet Shot
25 to 25.	Shot
Galvanized, 10 to 20	N. P. U. A 200 E 200 C 11. Tin.—burr: Plates, Sheets, T 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Galvanized, 25 to 26 To 20 C 8%C Galvanized, 27 P 10%C 9 C Galvanized, 27 P 10%C 9 C 10%C	a b; Electro-galvanized Plattures of, not enumerated, 35
Pasent Flanished	Dar cent.
COPPER. DOTT: Pig, Bar and Ingot, te; Old Copper 4c # 5; Manufactured (including all articles to	Straits. English
American ingot is dee frade the port.	I C 12X12 Prime Charcoal
BRATEINE BRAZIERS COPPER, BOLTS, &C. Brazier. Copper, ordinary sizes, 16 oz. per sq. 16, and o et # B	I X 10X14 Prime Charcoal I X 12X12, Prime Charcoal
Brasilers' Copper, ordinary sizes, under 15 oz. and over 12 oz., % sq. ft	D U 12/4x17, Prime Charcoal D X 12/4x17, Prime Charcoal For each additional X add
Braziers' Copper, Lighter than 10 oz. ? sq. ft. ? n gcc Cracas less than & in. in diameter	COKE TIN PLA
Segment and Pattern Sheets	I C 14x20 S
SHEATHING BRAZIERS COFFER, BOLTS, &C. Brader. Copper, ordinary sizes, tous per sq. ft., and o of \$\pi\$ B. Fraders' Copper, ordinary sizes, under 15 oz. and over 12 oz., \$\pi \text{sq}\$ ft. \$\pi\$ 50 Braziers' Copper, to 0x and 12 oz., \$\pi \text{sq}\$ ft. \$\pi\$ 50 Braziers' Copper, to 0x and 12 oz., \$\pi \text{sq}\$ ft. \$\pi\$ 50 Circles less than 6t in. in diameter. \$\pi\$ 50 Circles 8t in. diameter and over. \$\pi\$ 50 Copper 15 Dept. \$\pi\$ 50 Sheathing Copper, over 10 oz. \$\pi\$ \$\pi\$ 16 Bolt Copper. \$\pi\$ 50 Copper Bottoms. \$\pi\$ 50 No Copper is 50-seathing except 14x40 inches, and not to exceed 34 oz. to the \$\pi\$, ft. TINNING.	I C 10X14 I C 14XE0 I C 12X12 I EMPE FLAT Prime Char. of I C 14X20 \$5.50 \$5
to exceed 34 oz. to the sq. ft. TINNING.	I C 14X20 - \$575 @ 55 I X 14X30 - 7.50 @ 55 I X 14X30 - 7.50 @ 11 I X 26X26 - 11,75 @ 12.50 & 11.31 I X 26X26 - 15,50 @ 12.31 I C 2XX50 M. F. Bradd & 60 L D ER - 1/2 & 1/4.
All other size Sheets, 250 F eq. ft. For tinning both sides, double the above amount.	I C 20x20 15.50 \$ I C 14x20 M. F. Brand SOLDER—¼ & ½
O'NELLA PATENT PLANISHED COPPER Net.	No. 1
14 and 16 oz. and heavier. # B 370 By the case. # B 350 12 oz. and lighter	P 100 B. American, cash
	American, cash, ZINC,—DUTT: Pig or Block, 8 3/4 % 7. Sheet, Cask. Sheet, Open.
24 and 15 oz. and heavier	Paper Stoc
Brown & Sharp's Gauge the Standard for Metals. Old English Gauge the Standard for Wire.	
BRASS MANUFACTURERS' PRICE LISTClis. 20 @ 25 %.	(Dealers' Selling I White Shirt Cuttings, No. 1
Cash prices for Roll and Sheet Brass. For less quanties than 100 Bs add 30. Th.	White Shirt Cuttings, No. 1. White Shirt Cuttings, No. 2. Mill Assorted Whites. Unbleached Muslins City Whites, No. 1. New Canton Flannels. New Seconds light
All Nos. not thinner than to No. 28, wider than 2 in, not wider than 1 in	City Whites, No. 1. New Canton Flannels. New Seconds, light. New Seconds, dark. No. 2 Whites.
All Nos. to No. 26, inclusive, and widths over 14 to 20 in, inclusive	New Seconds, dark
All Nos. to No. 38, inclusive, and widths over 20 to 30	No. 2 Whites
In., inclusive	No. 2 Whites. Cotton Canvas. Linen Canvas. Ro. 1 Seconds, City No. 2
In., inclusive	No. 2 Whites. Cotton Canvas. Linen Canvas. Re. 2. Seconds, City No. 1. Seconds, City No. 2. Colors, per 10c Bs. Manila Eope. Manila Eope. Manila Eope. Manila Eope.
In., inclusive	No. 2 Whites. Cotton Cauvas Linen Canvas, fb. 1 Seconds, City No. 1 Seconds, City No. 1 Seconds, City No. 2 Oolors, per 10e Bs. Manila Bope. Manila Bope, Tarred. Gunny Bagsing, No. 1. Gunny Bagsing, No. 8.
m. inclusive. \$\frac{45}{60}, \psi \text{ advance on each No. above Nos. \$\frac{35}{10}, \psi_1\text{ inclusive.} \$\frac{1}{40}\$ Brass thinner than No. 5 is Platers' Brass, at. \$\frac{150}{10}\$ Cheets 2475, and all sheets out to particular sizes and lengths under 30 in., in width wider than 2 in. 370 Frinters' Rules \$\frac{150}{20}\$ in. and under 40 is. \$\frac{450}{20}\$ Chrealar Sheets, in diam. from 4 in, to 14, inclusive. \$\frac{150}{20}\$ Ctrealar Sheets, in diam. from 4 in, to 14, inclusive. \$\frac{150}{20}\$ Ctrealar Sheets, in diam. from 4 in, to 14, inclusive. \$\frac{150}{20}\$ Ctreals \$\frac{150}\$ Ctreals \$\frac{150}{20}\$ Ctreals \$\frac{150}{20}\$ Ctreals \$	No. 2 Whites. Cotton Canwas. Linen Canwas. Ro. 1 Seconds. City No. 1 Seconds. City No. 1 Seconds. City No. 2 Oolors, per to Bs. Manila Bope. Manila
m. inclusives. \$60, \$\partial \text{p}\$ advance on each No. above Nos. \$2 to \$\partial \text{s}\$, in: \text{distance} \text{distance} \text{class} \text{sinders} \text{Reass, at \$50} \\ \text{distance} distan	No. 2 Whites. Cotton Canvas, 16. 1 Seconds, City No. 1. Seconds, City No. 1. Seconds, City No. 2. Oolors, per 100 Bs. Manila Bope. Mani
m. inclusives. \$60, \$\partial \text{p}\$ advance on each No. above Nos. \$2 to \$\partial \text{s}\$, in: \text{distance than No. } is Flaters' Bress, at. \text{spo}\$ and lengths under so that to particular sizes and lengths under so in. in width wider than \$2\$ is. \$70\$ Finiters' Rules Sheets wider than \$0\$ in. and under \$0\$ is. \text{spo}\$ Circular Sheets, in diam. from \$4\$ in, to 14, inclusive \$60\$ Over 14 20,	Cition Canvas, No. 1. Seconds, City No. 1. Seconds, City No. 1. Colors, per 10 Bs. Manila Eope.
m. inclusives. \$\frac{\pmathcal{Q}}{\pmathcal{Q}} \pmathcal{Q} \pmath	Cition Canwas, No. 1 Seconds, City No. 1. Seconds,
m. inclusive. ### Advance on each No. above Nos. ## to ### in the Nos. #### Advance on each No. above Nos. ## to ### in the Nos. #### Advance on each No. above Nos. ## to ### in the Nos. ##### Advance on each No. above Nos. ### in the Nos. ##### Advance on each No. above Nos. ### in the Nos. ###################################	Cition Canwas, No. 1 Seconds, City No. 1. Seconds,
m. inclusive. \$60, \Phi a davance on each No. above Nos. \$8 to \$5, inclusive. All Brass thinner than No. 5 is Platers' Brass, at 190 Sheets aya \$6, and all absets out to particular sizes and length and are pin., in width wider than \$10. 190 Finners' Rules' and all absets out to particular sizes and length and pin., in width wider than \$10. 190 Finners' Rules' and all absets out to particular sizes Sheets wider than \$10. 190 Circular Sheets, in diam. from 4 in. to 14, inclusive. 400 10	Cotton Canvas, No. 1 Seconds, City No. 1. Seconds, City No. 2. Manila Boye Manila Bo
m. inclusive. ### Advance on each No. above Nos. ## to ### inclusive. #### Advance on each No. 5 is Piaters' Brass, at 190 Energy of the No. 5 is Piaters' Brass, at 190 Energy of the No. 5 is Piaters' Brass, at 190 Energy of the No. 5 is Piaters' Brass, at 190 Energy of the No. 5 is Piaters' Brass, at 190 Energy of the No. 190 Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 24 ance. Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 24 ance. Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 280 Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 280 Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 280 Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 280 Metal, in width 1 in. to 14 in. thinner than No. 28, 20 % in each 280 Metal, in width 1 in. to 14 in. thinner than No. 28, 30 % in. Metal, in width 1 in. to 14 in. thinner than No. 28, 30 % in. Metal, in width 1 in. to 14 in. thinner than No. 28, 30 % in.	Cition Canwas, No. 1 Seconds, City No. 1. Manila Rope, Tarred. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Tar Shakings. Hemp Twine Stock. Hard White Shavings, No. 1. Soft White Shavings, No. 1. Soft White Shavings, No. 1. White Shavings, No. 2, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 1. Solid Stock, No. 1, light. Old Newspapers Fure Manilas. Book Stock, No. 1, light. Old Newspapers Fure Manilas and Hardwares. Sogus Manilas and Hardwares. Sindery Board Cuttings. Straw Board Cuttings.
m. inclusives. \$\phi_0, \psi advance on each No. above Nos. 28 to \$\psi_1\$, inclusives. All Brass thinner than No. 8 is Flaters' Brass, at so these synds and all abeets out to perfolure sizes. Brook and all abeets out to perfolure sizes. Finters' Rules. \$\phi_1\$ in width wider than 2 in. 370 Circular Sheets, in diam. from 4 in. to 14, inclusives. 400 Over 14 20, 400 Low HEASS. c \psi_2\$ more than High Brass. cilding Metal, 50 \psi_2\$ more than High Brass. In Bars 100 Ba	Cition Canwas, No. 1 Seconds, City No. 1. Manila Rope, Tarred. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Tar Shakings. Hemp Twine Stock. Hard White Shavings, No. 1. Soft White Shavings, No. 1. Soft White Shavings, No. 1. White Shavings, No. 2, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 1. Solid Stock, No. 1, light. Old Newspapers Fure Manilas. Book Stock, No. 1, light. Old Newspapers Fure Manilas and Hardwares. Sogus Manilas and Hardwares. Sindery Board Cuttings. Straw Board Cuttings.
m. inclusive. \$\phi_0, \psi\$ b advance on each No. above Nos. \$\psi\$ to \$\psi\$, inclusive. All Brass thinner than No. \$\psi\$ is Flaters' Brass, at \$\psi\$ cheese wind and all abeets out to particular sizes. Fine the state of the state	Cition Canwas, No. 1 Seconds, City No. 1. Manila Rope, Tarred. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Tar Shakings. Hemp Twine Stock. Hard White Shavings, No. 1. Soft White Shavings, No. 1. Soft White Shavings, No. 1. White Shavings, No. 2, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 1. Solid Stock, No. 1, light. Old Newspapers Fure Manilas. Book Stock, No. 1, light. Old Newspapers Fure Manilas and Hardwares. Sogus Manilas and Hardwares. Sindery Board Cuttings. Straw Board Cuttings.
m. incitative. \$\frac{\partial}{\partial} \partial \part	Cition Canwas, No. 1 Seconds, City No. 1. Manila Rope, Tarred. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Gunny Bagging, No. 1. Tar Shakings. Hemp Twine Stock. Hard White Shavings, No. 1. Soft White Shavings, No. 1. Soft White Shavings, No. 1. White Shavings, No. 2, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 3, soft. Mixed Shavings, No. 1. Solid Stock, No. 1, light. Old Newspapers Fure Manilas. Book Stock, No. 1, light. Old Newspapers Fure Manilas and Hardwares. Sogus Manilas and Hardwares. Sindery Board Cuttings. Straw Board Cuttings.
m. inclusive. \$\phi_0, \psi\$ is advance on each No. above Nos. 28 to \$\psi\$, inclusive. \$\phi_0all Brass thinner than No. 1s Flaters' Brass, at \$0\$ Elects synd, and all abects out to particular sizes. \$\phi_0\text{all Brass thinner than No. 1s prepared to the property of	Control Canada S. C. Linen Canad
m. inclusive. \$\phi_0, \psi\$ is advance on each No. above Nos. 28 to \$\psi\$, inclusive. \$\phi_0all Brass thinner than No. 1s Flaters' Brass, at \$0\$ Elects synd, and all abects out to particular sizes. \$\phi_0\text{all Brass thinner than No. 1s prepared to the property of	Control Canada S. C. Linen Canad
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m. inclusive. 40. \$\psi\$ advance on each No. above Nos. 28 to \$\psi\$, inclusives. All Brass tinner than No. \$\psi\$ is Platers' Brass, at \$\psi\$ Breefs synd, and all sheets out to particular sizes. Printers' Rules. \$\psi\$ sheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. and under \$\psi\$ in \$\psi\$ \$\psi\$ cheets wider than \$\psi\$ in. \$\psi\$ in \$	Control Canada Social Control Canada Social Canada Catty No. 1 Seconda, City No. 2 Seconda, City No. 2 Seconda, City No. 3 Seconda, City No. 3 Seconda, City No. 4 Seconda, City No. 5 Seconda, City No. 5 Seconda, City No. 6 Seconda, City No. 6 Seconda, City No. 6 Seconda, City No. 6 Seconda, City No. 8 Seconda, City No. 8 Seconda, City No. 8 Seconda, City No. 1 Tar Shakings Secondary Second
m. inclusive. \$\frac{\partial}{\partial} \partial \text{inters} \text{Brass, at yo} \\ \text{all Brass thinner than No. is Flaters' Brass, at yo} \\ \text{all Brass thinner than No. is Flaters' Brass, at yo} \\ \text{all Brass thinner than No. is Flaters' Brass, at yo} \\ \text{all charging under go in., in width wider than 1s yo} \\ \text{all charging under go in., in width wider than 1s yo} \\ \text{charging in diam. from 4 in. to 14. inclusive. you} \\ converted to 20	Linen Canwas, No. 1 Linen Canwas, No. 1 Linen Canwas, No. 1 Seconds, City No. 2 Coolors, per 10 B4. Manila Rope, Tarred. Gunny Bagging, No. 1 Lorente Canwas, No. 1 Lorente Canw
m. inclusive. ### Advance on each No. above Nos. 28 to \$4, inclusive. ### All Brass inner than No. \$1s Platers' Brass, at	Control Canada S. C. Control Canada S. C. Canada S. Canada S. C. Canada S. Canada S. C. Canada S
m. inclusive. ### Advance on each No. above Nos. 28 to \$, inclusive. ### All Brass tinner than No. \$ is Flaters' Brass, at. 190 ### Brass tinner than No. \$ is Flaters' Brass, at. 190 ### Brass tinner than No. 1 is Flaters' Brass, at. 190 ### Brass tinner than No. 1 is Flaters' Brass, at. 190 ### Brass to the particular sizes #### Brass to the particular sizes ##### Brass to the particular sizes ##### Brass to the particular sizes ##### Brass to the particular sizes ###################################	Control Canada S. C. Control Canada S. C. Canada S. Canada S. C. Canada S. Canada S. C. Canada S
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m. inclusive. 40. \$\psi\$ advance on each No. above Nos. 28 to \$\psi\$, inclusive. All Brass tinner than No. \$\psi\$ is Platers' Brass, at	Linen Canwas, No. 1 Seconds, City No. 3 Coolors, per 10 28-8 Manila Bope. Marila Barilags. No. 1 Tar Shakings. No. 1 Tar Shakings. No. 1 Tar Shakings. No. 1 Mired Shavings, No. 2 Mired Shavings, No. 2 Mired Shavings, No. 2 Mired Shavings, No. 2 Mired Shavings, part white Ledger and Wrifing. Solid Stock. Book Stock, No. 1, light. Old New spapers Pour Manilas. Book Stock, No. 3, light. Old New spapers Boyen Manilas and Hardwares. Book Stock, No. 1, light. Old New spapers Book Stock, No. 2, light. Old New spapers Book Stock, No. 2, light. Old New spapers Book Stock, No. 3, light. Old New spapers Book Stock, No. 2, light. Old New spapers Book Stock, No. 3, light. Book Stock, No. 3, light. Book Stock, No. 3, light. Old New spapers Book Stock, No. 3, light. Book Stock, No. 1, light. Book Stoc
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m. inclusive. 40. \$\psi\$ advance on each No. above Nos. 28 to \$\psi\$, inclusive. All Brass inner than No. \$\psi\$ platers' Brass, at. \$\psi\$ cheefs synd, and all heets out to particular sizes. Printers' Rules. 5 hoets wider than 5 in. and under \$\psi a 470 6 in. and over \$\psi a 470 6 in. and and	Linen Canwas, No. 1 Seconda, Cry No. 1 Colors, per 10 No. 1 Colors, per
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m. inclusive. 40. \$\psi\$ advance on each No. above Nos. 28 to \$\psi\$, inclusive. All Brass tinner than No. \$\psi\$ is Platers' Brass, at. \$\psi\$ and lengths under so in. in width wider than \$10. \$\psi\$ printers' \$10. \$\psi\$ sheets wider than \$0 in. and under \$0 in. \$10. \$\psi\$ sheets wider than \$0 in. and under \$0 in. \$10. \$\psi\$ sheets wider than \$0 in. and under \$0 in. \$10. \$\psi\$ sheets wider than \$0 in. and under \$0 in. \$10. \$\psi\$ sheets wider than \$0 in. and under \$0 in. \$10. \$\psi\$ sheets \$10.	Linen Canwas, No. 1 Seconda, City No. 2 Seconda, City No. 3 Seconda, City No. 3 Seconda, City No. 3 Seconda, City No. 4 Colors, per 10 Me. 4 Manila Bope. 4 Manila Bope. 4 Manila Bope. 1 Mired Shavings, No. 1 Mired Shavings, No. 2 Seft White Shavings, No. 2 Seft White Shavings, No. 2 Mired Shavings, part white Ledger and Writing. 1 Sold Stock. 1 Book Stock, No. 1, light. 1 Old Newspapers Pure Manilas. 1 Book Stock, No. 1, light. 1 Old Newspapers Pure Manilas. 1 Book Stock, No. 1, light. 1 Commond per too be. 1 Black Lamp, Ordinary Black Lamp
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Frastines				400
Frestings. Glue, Wnite. Glue, Sheet.	*******	*******	*******	24 (8) 340
	******	******	******	
Gum, Copal	******		******	50
Gum, Damar				250
Gum Shellac, English	******	******	******	440
I Itharge English		******	******	7140
Litharge, English	mps			4 @ 60
Pumice Stone, Powdered		******	******	2960
pine Tar, bbls. Pitoh Putty, in bladders. Putty, in bulk. Rosin—Common and Geod-	******		*******	83.50
Putty, in bladders	*******			3 0
Rosin-Common and Good	Strai	had		22.40
5 Pine Tar, bbls. 4 Pitoh. 5 Putty, in bladders. 6 Putty, in bluk. 7 Rosin—Common and Geod. 7 E&F. 8 G&H. 1 & K. 1 & K. 8 Spirits Turpentine.			82.55	@ \$2.05
G & H I & K M & N Spirits Turpentine		******	70	\$2.85
MAN		*******		4 15 BC
Spirits Turpentine			55	0 @ 570
Waste, No. 1 Cop Waste, No. 1 White Machine Waste, No. 2 White Machine				300
Waste, No. 2 White Machine		******	*******	9340
Waste, No. 1 Colored	******	*******	******	6140
Waste, No. 2 White Machine Waste, No. 1 Colored	*******	*******	********	00
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Gla	nn.			
Prices current pe			set.	
New list, Jan	uary 1	7, 1063.		
Single	Thick.	11	17.	-
BIZES.	ıst.	ad.	gd.	4th.
6 X 8 to 10 X 15	\$10.00	8 9.25	8 9.00	8 8.50
6 x 8 to 10 x 15	11.50	IO.75 18.75	10.35	0.50 11.50
18 X 33 to 20 X 30	10.50	18.75	13.40	11.50
26 X 28 to 24 X 36	17.50	10.00	14-00	
11 X 14 10 10 X 24. 12 X 23 10 20 X 30. 13 X 35 10 24 X 30. 26 X 26 10 24 X 26. 26 X 36 10 20 X 44. 26 X 46 10 30 X 39. 20 X 36 10 36 X 54. 20 X 56 10 24 X 56.	18.75	17.24	14.50	
90 X 48 50 50 X 54	20.50	22.00	18.00	
30 x 56 to 34 x 56	24.00	22.00	19.75	
		24.75	21.50	
36 x 60 to 40 x 60 Double	Thiok	1 -30/06	23-75	-
SIZES.		2d.	ad.	4th.
	188.	300	-	4044
	\$1g.00	\$12.25	\$11.75	SIL-08
II X 14 to 16 X 24	15.75	14.75	14.00	
15 X 36 to 24 X 50	23.00	90.00	17-25	
II X 14 10 10 X 24. 18 X 26 10 20 X 30. 15 X 36 00 24 X 30. 26 X 36 10 36 X 44. 26 X 46 10 30 X 30. 30 X 56 10 36 X 44. 30 X 56 10 36 X 44.	34-00	33.50	17.75	
20 X 30 10 30 X 44	25.00	25.25	30.00	
30 X 52 to 30 X 54	30.00	28.00	34.00	
30 X 56 to 34 X 56	31.50	29.00	36.25	
94 × 30 00 34 × 00	38.00	31.50	32.00	
Sizes above-ars per box e	xtra fo	or ever	r s inat	°a.
An additional to per cent	will	be cha	rged f	or all
Glass more than 40 inches	wide.	All st	ses abo	rited
inches, will be charged in the	34 uni	ted inc	hes bra	cket.
Sizes above—\$15 per box e An additional 10 per cent Glass more than 40 inches inches in length, and not ma inches, will be charged in the Discount, 60 & 1	5 to 60	St 20 %.		
Toledo Spring and	d Va	rioty	Wat	ke
Luiguu Sullie all	u fa	HIGLY	110	NO.
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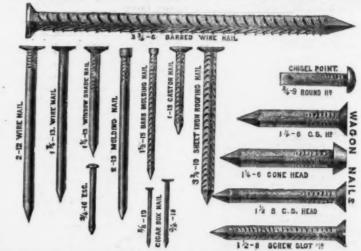
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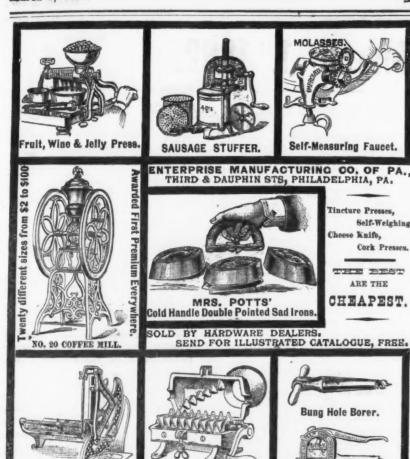
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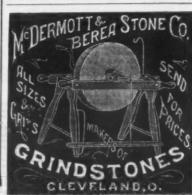
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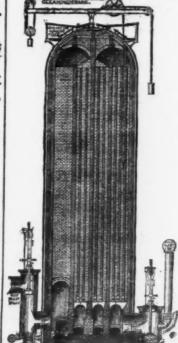
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New York Wholesale Prices, March 1, 1882.

NO	M INIK MIINI	
HARDWARE. Anvils. Anvils. Anvils. Anvils. Anvils. American. V B 10c dis 20 \$ Wright's. 10% © 11% co. 10% c 6 % of 20 Trenton. 10% c 10	Loose Toint Issessed with Access die column	And the second s
Millers Palls Co., \$28.00	Fast Joint, Narrow dis 40&10 \$ Fast Joint, Lt. Narrow dis 40&10 \$ Fast Joint, Lt. Narrow dis 40&10 \$ Fast Joint, Broad dis 40&10 \$ Loose Joint, Lit. dis 40&10 \$ Loose Joint, Broad dis 40&10 \$ Loose Joint, Lit. dis 40&10 \$ Loose Joint, L	
Fatent Sewing, Short	Dentity B	a bed a
ratent Peg, Leather Top	\$10.00 \$1.00 \$2.00 \$2.00 \$2.00 \$3.00 \$3.50 \$5.50 \$\$ Can Openers. Chesenger's Comet. # dos. \$3.00, dis 25 \$7 Americau. # gross \$7.50, dis 10 \$5 Duplex. # dos \$25, dis 55 \$2 Lyman's. # dos \$3.75, dis 20 \$1 No. 4, French. # dos \$3.75, dis 20 \$1 No. 4, French. # dos \$3.75, dis 20 \$1 No. 4, French. # dos \$3.55, dis 10 \$5 Ewreka. # dos \$3.50, dis 10 \$5 Ewreka. # dos \$3.00, dis 10 \$5 Ewreka. # dos \$5.00, dis 10	The second secon
Balances.	Cards.—Horse and Curry. new list. July '8t, d's 10 %	BY LEADER AND STREET
Crank, Taylor's	Casters. Bcd. dis 3ck to 5 Plate and Shallow Socket. dis 3ck to 5 Deep Socket. dis 3ck to 5 Deep Socket. dis 3ck to 5 Deep Socket. dis 3ck to 5 Plate Leaders. dis 5ck to 5 Sargent's. dis 6ck to 7 Challs. Prace, 5ck to	ARIJIJONEMBERNEU MERECO
Cow, Kontucky, Sargent's new list Cow, Modge's Genuine Kentucky, new list Nos. o 1 1½ 2 3 4 5 6 Hog dis 50 5 \$12.00 1000 9.00 \$.00 5.00 5.50 5.50 5.00 \$ dis 50 \$ \$ Cow, Texas "Star"	Socket Framing, Witherby Tool Co. dis 5520 5 8 8 8 8 8 8 9 8 9 8 9 8 9 8 9 8 9 8 9	CCADGC BISI CCB
Van Sand's, Screw pattern. \$8 \new gro. net Van Sand's, old pattern. \$8 \new gro. net Vashburn's Pattern. \$8 \new gro. \$10.50 net Merriman's. \$6 \new gro. \$10.50 net Mackroll's. \$\psi\$ dos pairs, \$5.65, dis 10 \$5 Bind Staples. \$\psi\$ in and larger. \$\psi\$ in in the bis net Bar bed, \$\frac{1}{5}\$ in. \$\psi\$ in 12 net Bar bed, \$\frac{1}{5}\$ in. \$\psi\$ in 25 net Blocks.—New list Jan. \$\circ\$ 1882. \$\psi\$ in 35 \$5 Penneld Block Co., Rope and Iron Strap'd. dis 35 \$5	Iron, Providence Tool Co.'s Wrt. Iron. dis 25 Iron, Adjustable, Gray's dis 26 Iron, Adjustable, Lambert's dis 26 Iron, Adjustable, Lambert's dis 26 Iron, Adjustable, Snow's dis 26 Iron, Adjustable, Snow's dis 15 Iron, Adjustable, Hammer's dis 15 Iron, Adjustable, Hammer's dis 26 Iron, Adjustable, Stearns' dis 26 Iron, Cabinet, Sargent's dis 26 Iron, Carlage Makers', Sargent's dis 36 Iron, Carlage Makers', Sargent's dis 36 Iron, Carlage Makers', Sargent's dis 46 Iron, Ir	HPP EA BNG (MAN)
Bolts. Cast fron Barrel, Shutter, &c. dis cotto 5 Cast Iron Chain (Sargent's list). dis 50 to 5 Free! Pat. Door Bolts. dis 50 to 5 Wrought Square. dis 50 to 5 Wrought Square. dis 50 to 5 Wrought Shutter, all Iron, Stanley's list dis 50 to 5 Wrought Shutter, all Iron, Stanley's list dis 50 to 5 Wrought Shutter, Bargent's list. dis 50 to 5 Wrought Shutter, Bargent's dis 50 to 5 Wrought Shutter, Bargent's dis 50 to 5 Wrought Sunk Flush, Sargent's dis 50 to 5 Wrought Sunk Flush, Stanley's dis 40 to 50 to 5 Wrought Sunk Flush, Stanley's dis 50 to 5 Wrought Buk K. Flush, Com'n, Stanley's dis 40 to 5 Carriage and Thre. Common. dis 50 to 50	Cocks, Brass, Cocks, Brass, Cocks, Brass, Cocks, Brass, Cocks,	Fin Fa
Boring Machines. Upright. Angular. First quality, no Augers. \$5.50 \$6.75dis 45.7 Phillips, with Augers. 7.00 Jennings & Co., no Augers. 5.00 6.75dis 49.8 Interchanges bie Shelf Boxes. dis 20.8 Interchanges bie Shelf Boxes. dis 20.8	Combined Dinner Pail and Lantern. Per dos. \$1,500. Compasses. Dividers. &c. Compasses	The factor of the Williams
Amidon's dis 60	4, % % in., \$1.80, 2.00, 2.40	TO I I I I I I I I I I I I I I I I I I I

csaic Tilocs,	17
Deg Coltars. Leather dis Brass dis Celluloid dis Door Springs.	
Torrey's Rod, regular size, per doz., \$3dis 40& Gray's Rod	
Gem (Coil)— No. 1, Large, Japanned. # doz 2,75 ds. No. 2, Medium, Japanned. # doz 2,75 ds. No. 3, Small, Japanned. # doz 2,75 ds. No. 3, Small, Japanned. # doz 2,75 ds. No. 4, Small, Japanned. # doz 2,05 ds. No. 5, Screen Door Size. # doz 3,00 ds. No. 5, Medium. # doz 2,00 ds. No. 5, Medium. # doz 2,05 ds. No. 7, Large. So. No. 7, Large. No. 1, \$1 2, \$1.9; 3, \$2; 4, \$2, \$3; 4, \$3, \$4, \$4, \$4, \$4, \$4, \$4, \$4, \$4, \$4, \$4	Bar Bar Clin Che Che Stee Che
Sabin's LeverNo. 1, \$1; 3, \$1.50; 3, \$2; 4, \$2.50; dis- Sabin's BossNo. 1, \$1 doz. \$4.00; 2, \$2.75; 3, \$2. Sabin's Crown. \$1 dos \$1.50; dis- Philadelphia. \$1n. \$4.00; \$1n. \$7.75, dis- Barker's Concealed. \$1.00; \$10.00; \$1.50	50 % Kid U. 8 The Ter 35 % H
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Drills and Drill Stocks. Backsmiths' each, \$2.50, dis slacksmiths' self-Feeding each, \$7.50, dis slacksmiths' Self-Feeding each, \$7.50, dis slacksmiths' Self-Feeding each, \$7.50, dis slreast, Hotchkins' dis sreast, Hotchkins' dis sreast, Hartholowniew's each, \$2.50, dis slreast, Bartholowniew's each, \$2.50, dis slreast, Bartholowniew's each, \$2.50, dis slatchet, Merrill's dis each, \$2.50, dis slatchet, Weston's dis slatchet, Weston's dis slatchet, Weston's dis slatchet, Woore's Triple action dis 2.62 eVhitney's Hand Drill of dis slatchet, Worden's dis slatchet, worde	Show Show Show Show Show Show Show Show
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Danbury	Coll Sh Cla
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Kmery and Emery Paper. Regular numbers. Flour and F. F. S. & A. Emery Paper. Sibley's Emery and Crocus Cloth, Large size. 316. Medium, \$10.90 F ream. dis 10 Engueted and Timed Ware.	6c Gate
Retties dis 4	Screen Str
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Union File Co. dis so Knox, 45c inch Rolls. \$3.50 each dis 25 Knox, 45c inch Rolls. \$4.50 each dis 25 Knox, 65 inch Rolls. \$4.50 each dis 25 Knox, 65 inch Rolls. \$4.50 each dis 25 Each, 55c inch Roll. \$4.50 each dis 25 Each, 55c inch Roll. \$4.50 each dis 25 Crown Age Inc. \$3.50 el.h. \$4.50 el.h. \$4.50 each dis 25 American 5.1n. \$8; 6 in. \$3.50; 7 in. \$4.50 each dis 25 American 5.1n. \$8; 6 in. \$3.50; 7 in. \$4.50 each dis 25 E	grows Wrou Wire Grass Whiff Hook
Domestic Fluter. 81. 50 each, no Geneva Hand Fluter, White Metal. 8 dos \$12, dis 25 Crown Hand Fluter, Nos. 1, \$15.00; 2, \$12.50; 3, \$10.00 Pd dos. 81.00 Pd dos. 9	Hook Hook Hook Hook Hook Hook Hook Hook
Clark's Hand Fluter and Sad Iron. # dos #1,00, dis 2016 Combined Fluter and Sad Iron. # dos #1,00, dis 2016 Euffalo. # dos #1,00, dis 2016 # dos #1,	A. C.,
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Burnished list as follows	Novel White Dunia Wood
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Gimlets. dis 50 Nail and Spike. dis 50 Nail and Spike. dis 50 "Eureka" Gimlets dis 60 "Eureka" Gimlets. dis 60 "Dumbel Cut, Shepardson's. dis 60 Duble Cut, Hartwell's. dis 50 Double Cut, Ives' dis 50 Double Cut, Douglass' dis 60 G Re Pais.	Brass Enam Ku Ames' Ames' Ames' Moran Hay a
Gue Pais, Timed and Enameled. dis 25 Family L. F. & C. s. "Handy" dis 25 sirinds tene Fixtures. Sarg. at 8 Patent. dis 25 Reading Hardwaie Co., new list. dis 25 Gun Wads.	Table Kni Carria Base Hema Door, Door, Door, Door, Door
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Challenge	Co\$1	dis 5 5; dis 55&1 dis 65&1	Plate
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The "Boss"	6 in., \$10	dis solt i	Norwich A F. Corbin Russell & Erwin Mallory, Wheeler & Trenton Lock Co Reading Hardware
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ollins. Shingling, Nos. 123		#6.50 \$7.00	Kieser's No. 55 Kieser's Gem Silver & Deming
Lathing, Nos. 123 Hay Knives.	# doz 6.90	6.50 7.00	Pennsylvania Nos. ¥ doz.
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dia 65&20	Deg Collars. Leather.	Hickory Firmer Ch	isel, assorted. W gross. \$4.50	Locks and Latches. Cabinet, Eagle
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dis 40&10 dis 40&10 dis 50&10	Door Springs. Torrey's Rod, regular size, per doz., \$	Socket Framing Chi File, assorted. Framing Chi File, assorted. Auger, assorted.	sel, assorted, # gross. 5.00 @ 2.75 25 @ 10 gross	Cabinet, A. R. Deitz
dis 50&10 dis 50&10 dis 50&10	% Gray's Rod See Rod Warner's	dis 15 % Auger, large, w gro Datent Auger, Ives' Patent Auger, Doug	1ass	Round Key. Nos. 1 to 5
dis 50&10 dis 55&10 dis 50&10	No. 1, Large, Japanned # d	log \$4.00 dis 40 % Barn Door, old patter	ernsdis 60&10 %	Yale Lock Co. Flat Key. dis 30640 % Yale Lock Co. Flat Key. dis 40 % "Shepardson "or "U.S." dis 25 %
dis 45&10 dis 55&10 psdis 45&10	Star (Coll)—For Cop'd, Nickel-Plated, No. 4 ("Shoo Fly") Screen door size, Wo	&c., see list. dog \$1.50	erus. dis 60&10 % qland dis 50&10 % quand dis 50&10 % quand dis 50 % quand dis 50 % dis 50 % quand dis 50 % qua	Plate dis 13462 g F. Many's "Extension Cylinder" \$10.50 \(\pi\) dos net
dis 40&10	No. 5, Medium	dog 4.00) 1. 4.25 do dia 90 Champion Medin Sterling Improved (Cheritres	Anti-Friction)dia 65&10 %	Branford
dis 40&10 dis 45&10 dis 40&10	Sabin's BossNo. i, \(\Phi\) doz. \$4.00; 2 Sabin's Crown \(\Phi\) do	0, \$2.75; 3, \$2.00 U.S.	4 in., \$12; 5 in \$15; dis 60 %	Norwich P. & F. Corbin
dis 40&10	Philadelphia	in., \$7.75, dis 35 % dis 20 dis 4 doz, dis 50 % Anchor (T. & S. Mig.	Co.) dis 6- 8	Reading Hardware Co
dls 4e&10	lercules	Judy's, list of 1/2 ch. dis 40 % Fitch's (Bristol), list	Co.)	Norwalk P. & F. Corbin. List prices as revised Dec. 1, Russell & Erwin. Mailory, Wheeler & Co. Trenton Lock Co. Reading Hardware Co. Fadlocks—Russell & Erwin. Mailory, Wheeler & Co. Wm. Wilcox & Co. Yale Lock Mig. Co.'s "Standard" dis 45 % Romer's. dis 45 % Grouph dis 46 % dis
dis 35	irlington Edge Tool Co	dis 65&10 \$ Andrews'dis 65&10 \$ Sargent's	dia 50 % dia 65&10 % dia 75 %	Romer's
	" I idinetable Handle	dis 15 % Covert	d18 50 %	J. H. McWilliams dis 10 % A. E. Diets dis 35 % "Star" dis 35 % Lustro,—4-ox. bottles, \$\pi\$ dor \$2.00; \$\pi\$ gros \$316.00 net
dis 25	Vitherby Tool Co	dis 65&10 % Isaiah Blood		Lustre.—4.ox. bottles, # doz \$2.00; # gros \$18.00 net Mallets.—Hickory
dis 70 dis 45& 10 dis 70&2 king," Nos.	llacksmiths' eac ilacksmiths' Self-Feeding eac ireast, P. S. & W.	ch, \$2.50, dis 10 \$\ \text{Lathing, Nos. 1 2} \\ \text{ch, \$7.50, dis 20 \$\frac{1}{3}\$} \text{Hunt's.} \\ \text{Shingling, Nos. 1 2} \end{aligned}	3 № dos 7.40 8.00 8.50 dis 10 % 3 № dos 87.25 88.00 88.75	Mallets.—Hickory dis 10&10 % Lignumvitæ
50 & 60.dis 70	reast, Hotchkiss' reast, Wilson's reast, Millers Fallseac	dis 20 % Claw, Nos. 12	3	Dixon's (P. S. & W.) Nog. 1 2 3 4 Wilea' Challenge, Nog. 17.00 19.00 30.00—dis 30 5
dis 45&10 dis 50 l 50d s 70	tatchet, Merrill's.	dis 25 % Claw, Nos. 1 2:dis 25 % Lathing, Nos. 1 2:dis 25 % Lathing, Nos. 1 2:	3	Perry'sNos. 1 2 3 4 4 8 7 4 5 8 7 4 Each\$22.00 4.00 12.00 4.00 - dis 20 %
is 66% 2& 10 dis 70& 10 .dis 66% 2 10 0, 1, 11, 2, dis 60& 10	tatchet, Weston's	Shingling, Nos. 12:	3	Woodruffs (P. S. & W.)Nos. 100 150 150 15.00—dis 30 % Hales'Nos. 11 12 13
		ch \$2.25, dis 20 % Simmons'	3. \$\frac{4}{4}\text{dox} \ 7.75 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.45 \ 0.50 \ 0.	Penneld Block Co. Lig., Apple & Hickorydis 20 S
dis 25 dis 55 40, dis 60&10	Drill Chucks. Morse's Beach Patent. Morse's Adjusteacl	th \$10.00, dis 30 \$ Broad, Nos. 1 2	3 dos 8.00 8.00 9.00 34 dos 9.00 10.00 12.00 14.00 78 dos 16.00 18.00 20.00 23.00	Nos 1 2 3 4 B 5 5 Each\$4,00 7.00 10.00 24,00 40.00 60.00
dis 20 dis 25 dis 25	Egg Benters.	dos \$2.50, dis 2 Collins. Shingling, Nos. 1 2 Claw, Nos. 1 2		Rieser's No. 55. \$40 W GOZ. dis 40 S Kieser's Gem. \$25 W doz. dis 40 S Silver & Deming. dis 25 S
7 8 3.50 36.50	Family (T. & S. of g. Co.)	"Lightning"		Nos
\$7.50, dis 25; \$7.50, dis 10; 50, dis 15@20; \$3.75, dis 20;	Elevator Buckets. Mill E. Buckets. light, 2½ to 10 in. (Duc Pros \$1.00 Mill E. Buckets, heavy, 5 to 10 in. (Duc documents of the control	e's Improved) Gate, Western	dis valvas # doz \$6.25, dis 55&5.45.05 # doz \$0.25, dis 55&5.45.05 # doz \$0.35, dis 55&5.45.05 # doz \$0.50, dis 55.55.45.05 # doz \$0.50, dis 55.55.45.05 # doz \$12.50, dis 55 # doz \$12.50, dis 55.05 # doz \$12.50, dis 55.05 # dis 50.40 # dis 50.40 # dis 50.40 # 12 in. \$7.00 # 100 B # 12 in. \$0.00 # 100 B # 15 in. \$0.50 # 100 B # 16 i	Mincing Knives. Mincing Knives. Am. (2d quality). F gross. 1 blade. 2: 2 blades. \$22.4
	Mill E. Buckets, heavy, 5 to 10 in. (Duc	c's improved) Gate, N. E. Reversible Gate, Clark's, Nos. 1,	e	Mincing Knives. Am. (2d quality), # gross, 1 blade, 7; 2 blades, \$12; 3 blades, \$16
\$7.50, dis 10 \$2.50, dis 10 \$7.00, dis 55	Regular numbers	Gate, N. Y. State Gate, Automatic Gate, Common Sense	₩ doz ₩0.50, dis 00%10 % ₩ doz ¥12.50, dis 40 %	Cowles Hdw. Co
\$7.00, dis \$5 \$5.00, dis 25 \$2.50 dis \$0.810	Flour and F. F. B. & A. Emery Paper. Sibley's Emery and Crocus Cloth, Lar Medium, \$10.50 P ream.	dis 30%; Gate, Shepard's Gate, Shepard's Rolled Blind Hinges.	Nos. 10, 20 & 25, dis 50&10 % dis 50&10 %	Steeblins Genuine. dis 754210 5 Steeblins Tinned Ends dis 554210 5 Steeblins Tinned Ends dis 554210 5
2, \$24; No. dis 40 9 \$3.00, dis 35 9	Enameled and Tinned Ware.	Rolled Raiseddis 45 % Phoreidence (8, 10)	R 12 in., \$7.00 ₩ 100 B }dis 10 %	Busa's. dis 20 \$ Lincoin's Pattern. dis 60& 10 \$ Weed's.
dis rokto 5	finned Sauce Pans.	dis 25 % Screw Hook and 5 %dis 25 % Strap	to 36 in., \$6.50 \$ 100 \$dis 10 \$	Melnases (Jaices dis 70%10 Stebbins Pattern dis 70%10 Stebbins Genuine dis 075,6210 Stebbins Tinned Ends dis 50%10 Stebbins di
die 1085 5		neavy wested nook	(14 in. & up, \$6.00 \$ 100 b) 20 %	Nails
1.40 dis to 2	Brass Thread. Same discounts Wood.	s as Door Locks dis 55 % Serew Hook and Eyedls 25 %		add 360 to list)
c, dis 10&10 f	Fenn's Bohren's Pat. Rubber Ball	Wrought Strap and T Hoes. dis 25 % Riveted Shank	list, Dec. 20, '77dis 40&10&10 %	Square Nuts
dis 70&10 9 dis 20&10 9 ly '81, d's 10 9	Lane's (Self-Measuring)	, \$36.00, dis 25 % Grub. dis 25% Planters'.	dis 15 \$	Nut Crackers. Table (Humason & Beckley Mfg. Co. dis 32/5 5 Blake's Pattern. # dos \$2.50, net Turner & Seymour Mfg. Co. dis 50 5
y, '81, dis 10 9 y, '81, dis 10 9	West's Patent Key	dis 45 % Scovill Pattern, Hand Hick's Pat. Solid C. S. dis 70 % Hick's Pat. Solid C. S.	leddis 25 % Planters'dis 20&10&30 % Scovill Patterndis 20&5&35 %	O akum. Boot. # b ii c U. S. Navy. # b 5% Navy. # b 8%
\$5.00, dis 30 \$ \$2.00, dis 44 \$ dis 25 \$	Enterprise (Self-Measuring) # dos., J. Sommer's Best Metallic Key J. Sommer's Cork Lined, 1st quality	, \$36.00. dis 25 % Winsted & Lane, Plan Winsted & Lane, Scov Magic	ters'dls 25 % 'ill Patterndis 20 % 25 %	Navy # B 8½0 Ollers,—Zinc and Tindis 60 \$
dts 35&10 \$	Follos Piates	Bird Cage, Sargent's li Bird Cage, Reading	istdis 45&10 \$	Brass and Copper
dis 253210 S	F. M. Boynton's	ew list, dis 25 t Cotton. Cotton, Patented (N. Cotton (Humason & B	Y. Mallet & Handie Wks), dis 30 % eckley Mfg. Co.)	Ollers.—Zinc and Tin. dis 65 g Brass and Copper. dis 56 g Malleable (Hammer's). \$\forall \text{dos \$\forall \text{5}}\$ Malleable (Hammer's). \$\forall \text{dos \$\forall \text{5}}\$ Prior's Patent or "Paragon" Brass. dis 56 g Prior's Patent or "Paragon" Brass. dis 56 g Dimstead's, Tin and Zinc. dis 65 g Dimstead's, Tin and Zinc. dis 65 g Dimstead's, Brass and Copper. dis 66 g Drughton's, Brass. dis 66 g Drughton's, Brass. dis 67 g Drughton's, Brass
dis 60 %	Walter Spencer & Co.'s "Diamond"		dia to ff	UA 130110
700 dis 35 %	Moss & Gamble. H. Disston & Sons (new list)	dls 40 7 Cothes Line, Sargent's list.	8 tist	Packings, Steam, N. Y. Belting and Packing Codis 20 5
dis 35&10 \$ dis 35&5 \$ dis 40 \$	Nicholson. New American.	dis 40 g Harness, Reading list. Coat and Hat, Sargent	"u list	Peucils. ?aber's Carpenters'high list, dis 40&10 % ?aber's Round Gilt
₩ B 914c net dis 60&10 % dis 50&10 %	Fluting Machines. Knox, 4% inch Rolls	Picture Hooks, Brow gross	n's Pat. Solid Brass, \$4.00 \$\pi\$ in dis 25 \$\pi\$ in \$8, Mfg. Co.)	Feacuss. Feacuss. Aber's Carpenters'high list, dis 40&10 % Faber's Round Glit#gross \$5.34, net Dixon's Lead#gross \$4.40, net Dixon's Lumber#gross \$6.75, net Dixon's Carpenters'dis 40&10 %
gross for net	Eagle, 314-inch Roll. Eagle, 514-inch Roll.	Wrought Staples and Wrought Staples, Star Wire Screw Hooks and	Hooks and Staples dis cox sato & tiey's listdis cox sato & dis 25 ato & dis 2	
gross Sec net coss \$1.co net gross 190 net	Crown 19-111, \$3.50; 5-111, \$4,00; 5-111, \$0.50 Crown Jewel	o each, dis 25 % Whiffletree—Patent Hooks and Eye — Mall	eable Irondis 608 10 %	Picture Nails. Ais 45kto \$ 187as Head. Ais 45kto \$ 187as Head. T. & S. Mfg. Co. dis 45kto \$ 187as Head. T. & S. Mfg. Co. dis 45kto \$ 187as Head.
dis 65&7 % dis 55&10 % ist, dis 22% %	Union File Co. Fluting Machiness. Knox, 4½ inch Rolls	log \$12, dis 25 % Hooks and Eves—Bress 12.50; 3, \$10.00 Ausable: Nos. 5 6	7 8 9 10 dis miro 5	Pinking Irons # dog 740, net
dis 65&10 %	Shepard Hand Fluter, No. 85	10, \$7.00; No. Clinton, Plain, 9 B 23	7 8 9 10 10 10 20 20 20 20 20 20 20 20 20 20 20 20 20	Piniting Machines. Sign of dos \$10.00, net faster Plaiting Machines. Sorrown Plaiting Machines. Sign of the \$60.00, to in. \$80.00, each.
dis 65&10 % dis 65&10 % dis 65&10 % lst, dis 2216 %	Clark's Hand Fluter	13.00, dis 335 5 Essex, # 5310 28 1810.00, dis 30 5 Putnam310 28 1810.00, dis 10 5 National310 28	2 250 250 240 230dls 30 % 250 250 240 230dls 20 % 250 240 230dls 20 % 250 250 250 250 250 250 250 250 250 250	Crown Plaiting Machinesdis 25 % 6 in., \$6.00; 10 in., \$8.00, each.
dis 65&10 % dis 65&10 % dis 65&10 %	Flating Scissors	Globe, "31C 200	2 26c 24c 23c 23c	Bench, First Quality
dis 65&10 \$ dis 40@45\$ xxxxxx to &	Posts	Forged 280 344	23c 23c 21c 21cdis 20 %	Finnes and Plane Irons. such, First Quality. such, First Quality. dis 25 feech. Second Quality. dis 25 feech. Second Quality. dis 26 folding is 26 folding in the first Quality. folding is 26 fold
5.00 to £	I Plated Reed & Harton	Adis 4045455 \$\ \text{R. I. Horse Shoe Co., P. Light, Medium and E.}	2 29C 23C 24C .cc	pefiance Adjustabledis zo&10 % affin Mfg. Codis 35 % lane Irons, Butcher's
dis 20 % dis 20 % dis 20 %	Fruit and Jelly Presses. Enterprise Mfg. Co	dis 25 % Lee wis, Chisels American Ice Chise	dec. P dos \$3.50 net	lane Irons, Buck Bros
dl 4085 % dis 15 % dis 208:10 %	Fry Pans, 100 miles of the state of the stat	National Ice Chisel Novelty Ice Breakers. White's Sliding Head	# dox \$6.25 dis 20 % p	Iron " dis 20 % lane Irons, Ohio Tool Co. dis 20 % lane Irons, Sandusky Tool Co. dis 20 %
dis 65&10 % dis 66&10 %	"Acme"	7.00 8.00 9.00 Duniap's King Picksdis 40&10 % Wood Head Picks, Sarging Iron Head Picks, Iron Head P	gent's dog 81.60 dis 40&10 % ent's dog 81.25 dis 40&10 % ent's dog 81.75 net	Pliers and Nippers. utton's Patent
dis 40&5 % dis 65&5 %	G auges. G Marking, Stanley's. Marking, Chapin's. Wire. Wire. Wire, Disston's.	dis 55%10 % Ice Mallets, Pick in Hs Ice Mallets, Pick in Hs Ice Axes, Small Cast of Kitchen Ice Tongs	ndie	5 in., \$30; No. 4, 7 in., \$30 \(\psi \) doz
dis 33½ ≴ dis 35&10 ≴	Gimlets. Nail and Spike.	Combination Ice Tools Ketttles. dis 50 5	es inclusive \$\mathcal{P}\$ doz \$2.00 net R	Piters and Nippers. dis v3/4 % tutton's Patent. dis v3/4 % fail's Pat. Compound Lever Cutting Nippers. No. 2, dis 4/5 fail's Day. Gard. dis 4/5 tumason & Beckley Mig. Co. dis 30/6 p aureks. Piters and Nippers. dis 5/5 ureks. Piters and Nippers. dis 2/5 dis 2/5 dis 2/5 s. & W. Cast Steel. dis 3/5 s. & W. Tinners' Cutting Nippers. dis 1/5
dis 40 % dis 40 % dis 40 % dis 40 %	Gimlets. Nail and Spike. "Eureka" Gimlets. "Diamond " Gimlets Double Cut, Shepardson's. D uble Cut, Hartwell's. Double Cut, Ives"	dis 40 % Brass larger than 13 inc	es inclusive P B 30c net ches	S. & W. Tinners' Cutting Suppers. dis 15 % Plumbs and Levels. dis 40 %
	Double Cut Doneloge!	die d Amael Droad Eniver	dis 15 % Si dis 15 % C	Flumbs and Levels. isston's
dis 45 %	Gine Pass, Timed and Enameled. Family, Howe's "Eureka". Family, L. F. & G.'s "Handy". irlindstone Fixtures, Sarg-at's Patent. Reading Hardwate Co., new list.	Moran's Shoe and Brea Hay and Straw, Wads Table and Pocket	dis 15 S S C d Knives	napin's Non-adjustable
dis 25 % dis 25 % dis 25 % dis 46 %	Family. L. F. & C.'s "Handy"	Carriage (Jap'd 8oc # 8	many light did as he di	
rn. dis 30 %	Reading Hardware Co., new list	dis 25&10 % Door, Mineral	Same discounts as Door Locks. S	Post Hole and Tree Augers. amson Post Hole Digger
dla 55 %	(iun W.E.ds. U. M. C.B. E., 1 up	Door, Por	V75e grous inch, dis 10 %	aughan's Post Hole—6 in., \$25.00 # dosdis sokto % ureks Digsgers # dos \$27.00net eed's each \$2.50net
dia 55 % dia 608 5 % sdia 508 5 %	U. M. C. P. E., 9 & 10	Picture (T. & S. Mfg. Co	o.)dis 60&10 \$ Li	Pruning Hooks and Shears. isston's Combined Pruning Hook and Saw
0dis 50& 5 dis 60 5 dis 30 5 dis 50 5	Covert's Pat. Rope Horse and Cattle Ties, Covert's	dis 50 % Shutter, Porcelain I adies. Melting—Sargent's	dis 50&10 % Di	## dox #19.00, dis 20 %
	Llammers.	Melting, Reading	dis 45&10 5 E E C C C C C C C C C C C C C C C C C	runing Shears W dos \$5,50 6.00
dis 15 @ 20 % Co.dis 331/3 % dis 25 %	I Maydole's Cheney's Hartford Hammer Co. (new list July 1, '8 Humason & Beckley Verree Lagnette Tack, Nos. 1, 2, 3, \$1.26. 1.50 and 1. Kip's Kip's Pinns Wilkinson's Smiths'	dis 50 % Tubular	No. c. \$8.65; No. I. \$10.15 } With Guards 55c extra 1 net No. 1 \(\pi \) dos, \$10. No. 2, \$0, net per dos, \$0.50; No. 2, \$0.50; net \(\pi \) dos \$11.75; dis rotro 5 dis rotro 6 dis rotro 7 dis rotro 8 dis rotro 8 dis rotro 6 dis rotro 6 dis rotro 6 dis rotro 7 dis	runing shears. Palleys. of House and Tackle. dis 6okykro 5 p'd Screw. dis 6okykro 5 presserve. dis 6okykro 5 presserve. dis 50kro 5 p'd Clothes Line dis 50kro 5 p'd Clothes Line dis 50kro 5 p'd Clothes Line dis 50kro 5 p'ers, "Anti-Friction" dis 50kro 5 p'ers, "Anti-Friction" dis 50kro 5 qr Fork, "P' Common and Pat. Bushed. dis 20 5 dis 60 5 dis 60 5
'sdis to \$	Warner & Noble's. Kip's.	dis 10 % Nail City	, per dos, \$9.50; No. 2, \$9, net Ja , per dos, \$9.50; No. 2, \$8.50, net Ja , per dos, \$9.50; No. 2, \$8.50, net Hu	p'd Clothes Line dis 50 i Swivel, \$5.00, dis 50 it of ay Fork, Solid Eye \$4.50; Swivel, \$5.00, dis 50 it of ay Fork Anti-Friction
₽ b 81(c	Wilkinson's Smiths'. Hand Cuffs and Leg Irons.		dis 10&20 \$ Hi	ay Fork. "Anti-Friction" 80 75, Gis 10x:0% gay Fork, "F" Common and Pat. Bushed. dis 20 5 gay Fork, Tarbox Pat. Iron. dis 20 5 gade Rack dits 5
dis 10 \$ 3.65, dis 10 \$ 7.50, dis 20 \$	Hand Cuffs and Leg Irons. Providence Tool Co., Hand Cuffs, \$1,00 P Providence Tool Co., Leg Irons, \$25,00 P d Tower's.	dos. dis 10 % Pankee		
7.50, dls 20 %			lphis and Excelsior, new Sp	Funcares. # dos \$2.00, 225, 2.50, dis 50 5 mis & Call Co. 's Cask Speed Drive
dis 50 \$dis 25 \$	Nos 2 1 2 3 1.60. Nos 2 1 2 3 1.60. Per dog	1 36C @ 400 net Lemon Squeezers 1 1.10, dis 10 % Porcelain Lined	© doz \$6.00,dis 30 5 80 80 80 80 80 80 80 80 80 80 80 80 80	mis & Call Co.'s Spring and Check. dis 40 %
0.00, dls 15 %	no Plate, \$1.10	Si. 60, dis 10 % Eureka, Tlaned	# doz 8.00, dis 10 % # doz 84.00 net # doz: dis 25% 10 %	Sliding Door, Wrought Brass
	Surface Chest	dis 55 k 10 \$ Townsend's Patent dis 55 k 10 \$ Jennings "Star " dis 50 k 10 \$ Lines .—Linen Fish		D. for N. E. Hangers Small. Med James
dis 25 g dis 3315 g dis 3315 g	Flush Chest. Lifting. Saw and Flane Boynton's Patent Loop Saw Handles. Boynton's Patent Contennial Saw Handle Lianmer and Hatohet. Brind Awit	dis 40k10 \$ Cotton Chalk	Iphia and Excelsior, new Sp Si Si Si Si Si Si Si	Pail. Asilding Door, Wrought Brass
dia 25 %	Brad Awi F gross, \$3.0	oc, dis 20 to S WAP Clethes, Galvania	od,each 250@400 not J.	Razore. R. Torrey RasorCodis 15 %

March 2, 1882.	
Hazer Straps. die 60 @ 65 % Genuine Emerson die 60 @ 65 %	Slates.
Badger's (not Emerson). dls 334% Evans* dls 47% Evans* dls 47%	Square Frames, by case
Hazor Straps. dis 60 @ 61 g	Defiance Metallic di Iron di Iron di Iron di Iron di Iron di Iron di Generale
Riverse	Spoke Trimmers. P doz \$10.00, Stearns' P doz \$10.00, Stearns' P doz \$0.00, d fves' No. 1, \$15.00; No. 2, \$2.20 P doz, d Douglass' P doz \$9.0
Kivet Being	Spoons. Bastingdis 6 Riveted Table and Tea
Rods. Stair, Brass	Solid Table and Tea. Britannia. Reed & Barton dis
Stair, American Patent. dis 20% Re Hers. Barn Door, Sargent's list dis 60&10&10% Acme (Anti-Friction). dis 50%	Solid Table and Tea. Britannia. dis Reed & Barton dis Reed & Barton dis Hall & Elton dis Holmes, Booth & Haydens dis German Silver did Cast Steel, Silver Plated Tin (P. S. & W.), Teas \$1.25 Fg Tin (P. S. & W.), Teas \$2.00 Fs Tin (Cowles Hdw. Co.), case lots Silver and Distance Silver and Distance Silver and
Rope, winfa Net Li-t, Oct. 4, 1881, dis on 5000 % and	Cast Steel, Silver Plated. Tin (P. S. & W.), Teas. Tin (P. S. & W.), Tables. \$2.00 \tau 8
Over. 1/40 % m Manila 3/4 inch and larger w m i c Manila 3/4 inch w m i ob/40	Tin (Cowles Hdw Co.), case lots
Manila, Tar'd Rope. 4 and 5-16 inch w b 17 c Manila, Tar'd Lath Yarn. 9 b 154cc	"Lightning" Screw Plate
Rope, Mnfs Net Li-t, Oct. 5, 1881, dis on 5000 b and over	Stone. Hindostan No. 1, 5c; Axe, 8c. d Hindostan Hacker Stone. # gross \$1.25 Sand Stone. # B 5c; Als Washita Stone. No. 2, # B Washita Stone. No. 2, # B Washita Stone. No. 2, # B Washita Stone. No. 1, # B Arkansas Stone No. 1, 4 to 6 in. # B Arkansas Stone No. 1, 4 to 6 in. # B Arkansas Stone No. 1, 5c o j in. # B Arkansas Stone No. 1, 5c o
Sisal, Hay Rope	Washita Stone, Slips
Rules Boxwood Ivory	Turkey Oil Stone (Chase)
Cad Irons. From 4 to 10 B # 5 % c net Self-Heating # doz \$0.00 net Self-Heating Tallors # doz \$0.00 net Self-Heating Tallors # doz \$1.00 net Glesson's Shield and Tollet # doz \$1.00 net Mrs. Pott's Irons. Doubled Pointed # dis 34.5 Mrs. Pott's Irons. Square Back # dis 36.5 Enterprise Sau Irons. Combined Fluter and Sad Iron # doz \$1.00 dis 40.55 Combined Fluter and Sad Iron # doz \$1.00 dis 15.5	Grindstones, Family, Loring's
Seff-Heating, Tailors . # dos \$18.00 net Glesson's Shield and Toilet . dis 24 % Mrs. Pott's Irons, Doubled Pointed . dis 35&5 %	Gem
Enterprise Star Irons	Stave Polish. Joseph Dixon's. F gross \$6. Gem. F gross \$6. Gold Medial. F gross \$6. Mirror " F gross \$6. Ruby F gross Dixon's Plumbago. F gross Soundary
Sand Paper. Baeder & Adamson's Flint, 2, 2½ & 2, 5.25 F ream Baeder & Adamson's Flint, 2, 2½ & 2, 5.25 F ream Baeder & Adamson's Flint, Assorted, 4.75 F ream Baeder & Adamson's Star. 3, 75 F ream Baeder & Adamson's Emery. Fream \$6.50 & 11.50 Bartles Flint, Same list as B & A. dis 25 % Bartles Harrison, \$1.75 F ream New England, same list as B. & A. Flint. dis 30 & Gage's. dis 30&5 \$	Steeldis 50 % : full cases, dis 50&10 Irondis 50 % ; full cases, dis 50&10
Baeder & Adamson's Star	Steel
Bartles Harrison, \$4.75 \(\) ream. \(\) dis 25 \(\) New England, same list as H. \(\) A. Flint. \(\) dis 30 \(\) Gage \(\) \(\) dis 30 \(\) 5	Tacks, Brads, &c. List of April 2, 1880.
Sash Cord.	Tinned Swedes Tacks
Silver Lake, Hemp.	Swedes Hungarian Naiis
Steel Ribbon dis 10 %	Finishing Nails
Ciarre 5, No. 1, state 5 and 5	Brush Tacks d Leathered Carpet Tacks d
Steir Ribboths. Stark's, No. 1, \$10.00; No. 2, \$3.00 per gross. dis 30\f 5 Ferguson's dis 30\f 5 Ferguson's dis 30\f 5 Ferguson's dis 30\f 5 Ferguson's dis 30\f 5 Steir	WinterDottom's 1ry and sater of Tracks, Brads, &c. I List of April 2, 1886. Tinned Swedes Tacks
The Perfect, Chark & Smith, N-Plated. # gro. \$77.00 net "Universal" dis 30 %	Common and Ring.
Sash Weights. Solid Eyes, in 500 B lots and over B b : Mc net Sausage Stuffers or Fillers.	Enterprise Mfg. Co. Tapos, Measuring. American Spring d
Sausage Stuffers or Fillers. # dox \$50 dis 30 f Miles	Thermometers.
Silvers	Tin Case
Disston's Mill dis 40 % Disston's Cross Cut. dis 40 % Disston's Hand, Panel, Rip, &c. dis 20 %	Wood Bottom
Boynton's Chemman, all lengths, new list. dis 20 % Boynton's One-Man, all lengths, new list. dis 20 % Boynton's Hillet Webs, 30 Inch. new list. dis 25 % Boynton's Lightning Buck Sawa X Rar. dis 25 %	Toe Calks.
Boynton's Lightning Hand, Panel and Ripdis 25 % Wheeler & Clemson Mrg. Co. 8 Hand. W. M. & C. Mrg. Co. Cross Cuts, except Monarch.dis 20 %	Tinners' Tools and Machines, Machines (P. S. & W.)
Livingston's Famed Wood- Livingston's Famed Wood- Nos- Nos- Nos- Nos- Nos- Nos- Nos- Nos	Wollensak's Patent. Richer's Patent, new list, Feb., 1882dia at Excelular.
Enterprise Mrg. Co	Trans. Game, Newhouse
Saw Rods	Transconnection of the control of th
Boynton's Fatent X Cut, per dos, \$12.00; Hand Saw per dos, \$10.00	Mouse, Catch-em-alive
Common Lever. # doz \$2.00, dis 30.210 \$ Leach's . No. 0, \$8.60; No. 1, \$15,00, dis 15 \$ Nash's . No. 1, \$2.50; No. 2, \$1,50, dis 20\$10 \$ Utomore Hotchkins .	Trowels. Lothrops Brick and Plastering. Read's Brick and Plastering Disston's Brick and Plastering Peace's Plastering. Clement & Maynard's Rose's Brick.
Hammer, Bemis & Call Co.'s new Patentdis 30&5 % Bemis & Call Co.'s Lever & Spring Hammer, dis 30&5 % Bemis & Call Co.'s Plate	Peace's Plastering
Bemis & Call Co. a Cross Cut	Rose's Brick. Brades' Brick Worrall's Brick and Plastering. Garden. Triers.
MOTTHE 452, Gls 35210 5	Manual (18)
Scales	Vises. Solid BoxList of July 1, '70
Fairbanks	Vises, Solid BoxList of July 1, 79 Solid "Crown" (A. H. Hildick)49 to 100 Solid, Peter Wright's. Solid, Wilkinson's.
Chatillon's Grocers' dis 40 % Chatillon's Eureks. dis 25 % Family Universal dis 56 %	Parallel, Parker's. Parallel, Wilson's
Family Favorite	Parallel, Sargent'sdi Parallel, Backus and Uniondi Parallel, Oval Silde
Scrapers. Adjustable Box Scraper (S. R. & L. Co.), \$5.50, dis 20&10 S Box, 1 Handle	Parallel, Double Screw Legdi Parallel, Prentiss Parallel, Simpson's Adjustable.
Defiance Box and Ship	Saw Filers, Bonney's
Buffaio Scale Co. dis 205; \$ Forsyth Scale Co. dis 20; \$ Howe's. dis 20k10 \$ Chatillon's Grocers' dis 20 \$ Chatillon's Grocers' dis 20; \$ Chatillon's Grocers' dis 20; \$ Chatillon's Eureka. dis 25; \$ Family Turivarial. dis 25; \$ Family Favorite. dis 30; \$ Family Favorite. dis 30; \$ Scale Beams, List of January 12, 1882. dis 30; \$ Scale Beams, List of January 12, 1882. dis 20; \$ Scrapers. Adjustable Box Scraper (S. R. & L. Co.), \$0. \$0, dis 20 & 10; \$ Box, 2 Handle. \$ \$ Box, 2 Handle. \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	Reading
Douglas Mfg. Codis 20&10&10 % Dission's	Johnson's Patent dos \$12.00
Buck Bros dis 25 Stanley Rule & Level Co. s, Varnished Hdis. dis 25 Stanley Rule & Level Co. s, Varnished Hdis. dis 262 Stanley Rule & Level Co. e, Black Handles dis 262 of 10 Stanley Rule & Level Co.	Penny's
Disston's Patent Excelsion	Writ Wheelsdis 500 Wire. Brass and Copper, list of June 10, 1880
Cowles Hdw. Co., No. 1 Extra. dis 40&10 \$ Cowles Hdw. Co., No. 1	Well Wheels. dis 60 Wire. Brass and Copper, list of June 10, 1880. Bright and Annealed. Nos. 0 6 18, dis 50 Bright and Annealed. Nos. 0 6 18, dis 50 Bright and Annealed. Nos. 0 7 6 5, deperded. Nos. 0 6 18 dis 45 Galvanized, Nos. 0 6 18 dis 45 Galvanized, Nos. 0 6 18 dis 45 Galvanized, Nos. 0 6 18 dis 45 Cast Steel. dis Cast Steel. Tinned, Nos. 0 6 18 dis 45 Tinned, Nos. 0 6 18 dis 45 Tinned, Nos. 0 6 18 dis 45 Tinned Broom Wire, Nos. 18 to 25.
Cowles Hdw. Co., Nos. 4 and co. dis 20 \$ Clark's Patent. dis 25 \$ Screws. Plat Hd Iron New list April 27, 1881. dis 20 \$ Round Head Iron. New list April 27, 1881. dis 20 \$ Round Head Iron. New list April 27, 1881. dis 20 \$ Round Head Brass. New list April 27, 1881. dis 20 \$ Round Head Brass. New list April 27, 1881. dis 20 \$ Round Head Brass. New list April 27, 1881. dis 20 \$ Round Head Brass. New list April 27, 1881. dis 20 \$ Round Head Brass. New list April 27, 1881. dis 20 \$ Round Head Brass. New list April 27, 1881. dis 20 \$ Round Head Blares. New list April 27, 1881. dis 20 \$ Round Head Blares. dis 20 \$ Round Head Blares. dis 20 \$ Round Head Iron. dis 20 \$ Rench, Iron. dis 20 \$ Rench, Iron. dis 20 \$ Rench, Wood, Heech. \$ Round Head, Iron. dis 20 \$ Rench, Wood, Heech. \$ Round Head, Iron. dis 20 \$ Rench, Wood, Heech. \$ Round Rench,	Coppered
Flat Head Brass. New list April 27, 1881. dis 30 % Round Head Brass. New list April 27, 1881. dis 30 % Brass and Silver Capped. dis 40 %	Tinned Broom Wire, Nos. 18 to 25
Japanned, list of Plain Screws dis 20 % Coach, Patent Ginlet Point dis 00 % Coach, Common of Lag dis 60 % dis 60 %	Galvanized Telegraph, Nos. 7 to 9
Machine, Flat Head, Iron	Fence Staples, Galvanized
Bench, Iron. dis 50% Bench, Wood, Beech. \$\psi \text{dos \$\psi_0\$co. dis 10 \$\psi\$ bench, Wood, Hiekory. dis 20% to \$\psi \text{dos \$\psi_0\$co. dis 10 \$\psi\$ land, Wood. dis 20% to \$\psi \text{dand, Wood}. dis 60% to \$\psi dand Rail, Humason, Beckley & Co. \$\psi\$. dis 40% for \$\psi \text{dand Rail, Am. Serow Co., list of Jan. 1, \$\psi\$1. dis 70% Jack (Wilson's). dis 25%	Galvanized Harb Fence. Steel Music Wire, Nos. 12 to 27
	Judd's Picture Wire. dis Clothes Line Wire, Galvanized
Screw Window Balances, R. B. Hugania's	Wrenches. American Adjustable Baxter's Adjustable "S," list Jan. 1880di
Sero'l Saws. Lester, \$10.00	Baxter's Diagonal. di Coes' Genuine. dis Coes' Mechanics dis 40d
Shears and Scissors. American (Cast) Iron. Pruning Hooks and Shears. Barnard's Lamp Trimmers. ### dox 3.75	Coes' Pattern Wrought. Girard Standard
1 1 2 3 3 3 3 3 3 3 3 3	Bemis & Call's Patent Combination. Bemis & Call's Merrick 'sPattern. Bemis & Call's Brigg's Pattern.
Mass. Cutlery Co. St. Trimmers	Wrenches, American Adjustable Baxter's Adjustable Baxter's Diagonal di Baxter's Diagonal di Coes' Genuine dis Coes' Hechanics' dis Coes' Pattern, Malleable dis Coes' Pattern Wrought dis Girard Standard dis Girard Standard dis Bomis & Call's Reseat Combination Bemis & Call's Reseat Combination Bemis & Call's Brigg's Pattern & Go. dis The Favorite Pocket (Bright) & Go. & S. Webster's Patent Combination
Sliding Door, Patent Roller. dis fock tok2 % Sliding Door, Patent Roller. dis fock tok2 % Sliding Door, Patent Roller. dis fock tok2 %	Wringers.
Sliding Door, Russell's Anti-Friction dis 60&10&2 % Sliding Door, Moore's Anti-Friction dis 45 % Sliding Shutter, R. & E. list dis 50&10&2 % Sliding Shutter, R. & E. list	Universal, XX, No. 2 Universal, XX, No. 1/4 Universal, XX, No. 1/4
Also, Cuttery Co. St. Trimmers	Universal, XX, No. 8
Ames, New list, July 1, 1881. dis 15 5 Griffiths dis 40&20 5 Old Colony.	Peerless, No. 2, no Cogs. Peerless, No. 1, no Cogs. Peerless, No. 2, with Cogs.
Payne Pettebone & Son, new list. dis 40% 10 % Payne Pettebone & Son, R. R. Shovels. dis 15 % Remington's (Lowman's Patent). dis 30 %	Poerless, No. 2, with Cogs. Poerless, No. 3, with Cogs. Poerless, No. 4, with Cogs.
Shovels and Spades. Shovels and Spades. Anes, New list, July 1, 1881. Old Colony. Payne Pettebone & Son, new list. General Services and Spades. Roulagions, Llowman's Patent). Skevels and Taggs. New list. Alis 58 Rouland's. Skevels and Taggs. Old Brass Head, E. & E. list. dis coknows Solutions Solutions Stolutions St	Weiners Fatest Combination Wrinsgers, Universal, XX, No. 256. Universal, XX, No. 25 Universal, XX, No. 15 Universal, XX, No. 16 Uni
The second secon	1

r ·	7
Slates. Square Frames, by case	
Less than a case. dis 53x10 3 Spoke Shaves. Defiance Metallic dis 20&10 5 From dis 45 % From dis 30&10 6 From dis 30&10 6 Stearns' (Stanley R. & L. Co.), new list dis 30&10 6 Stearns' (Stanley R. & L. Co.)	
Stearns Stea	1
Douglass' \$\times \text{qcz \$\\$9.00, \text{dis } 5\\$. \$\\$\text{Spoons}\$. Spoons. Bating. \text{dis } 60\text{ rok to } 8\$ Riveted Table and Tea \text{dis } 5\\$. \$\\$\text{Solid Table and Tea}\$. Bits 55 \$\text{Solid Table and Tea}\$.	8
Speens Basting	Т
Stone	l n
Joseph Dixon's F gross \$6.00, dis to 5 Gem F gross \$6.00, dis to 5 Gem F gross \$6.00, dis to 5 Gold Medal F gross \$6.00, dis 25 % Mirror F gross \$6.00, dis 25 % Ruby F gross \$6.00, dis 5 % Ruby F gross \$6.75, net Rising Sun F gross \$7.5, net Rising Sun F gros	-
Squares. Steel	
Winerbottom's Try and Miler dis 20x10 5 Tacks Brads, &cc.	
Ives' Tap Borers dis 15% to \$	v
Enterprise Mfg. Co. dis 25 % Tapes, Measuring. American. dis 20 % Spring. dis 25 % Thermometers. Tin Case. dis 70%10 % Tobacco Cutters.	10
Tin Case. dis 70%10 % Tohacco ('atters, Enterprise Mfg. Co. (Champion). dis 25 % Wood Botton # dor #12.00, dis 26 % All fronton # dor #12.00, dis 26 % Xashua Lock Co.'s # dor #16.0, dis 26 % Wilson's dis 26 % Too Calks. dis 35 %	F
Winsted	F
Transom Litters. Wollensak's Patent	F
Trans dis corrock g Trans	CP
Trewels. Lotnops Brick and Plastering dis 25 Reed's Brick and Plastering dis 15 Disston's Brick Brid Plastering dis 15 Disston's Brick Brid Plastering dis 20 Peace's Plastering dis 20 Reed's Plastering dis 20 Rose's Brick dis 15 Brades' Brick dis 15 Brades' Brick dis 15 Brades' Brick and Plastering dis 20 Rose's Brick dis 15 dis	2
Butter and Choese	1
Solid 'Crown' (A. H. Hildick).	916
Penfield Block Co. dls. 30 % V lars. V lars. List of July 1, 79, dls. 30 % Solid Covn." (A. H. Hildick). 40 to 100 %, 120 net Solid, Peter Wright's. 1356 Solid, Wilkinson's. 1356 Parallel, Parker's. dls. 10 % Parallel, Parker's. dls. 10 % Parallel, Howard's. dls. 26 % to \$ Parallel, Howard's. dls. 26 % to \$ Parallel, Howard's. dls. 30 % Parallel, Sargent's. dls. 15 % Parallel, Sargent's. dls. 15 % Parallel, Oval Silde. dls. 30 % Parallel, Simpson's Adjustable. dls. 35 % Parallel, Simpson's Adjustable. dls. 35 % "Family," List. net Saw Fliers, Stearn's. dls. 20 % to \$24.00, dls. 20 % to \$28 % Saw Fliers, Stearn's. dls. 20 % to \$25 % Saw Fliers, Stearn's. dls. 20 % to \$25 % Roadling, and Vises. dls. 36 % to \$25 % Richardson's Vise and Anvil. dls. 26 % to \$25 % Richardson's Vise and Anvil. dls. 26 % Richardson's Vises. dls. 20 % to \$25 % Richardson's Vises and Anvil. dls. 26 % to \$25 % Richardson's Vises and Anvil. dls. 26 % to \$25 % Richardson's Vises and Anvil. dls. 20 % to \$25 % Richardson's Vises and Anvil. dls. 20 % to \$25 % Richardson's Vises and Anvil. dls. 20 % to \$25 % Richardson's Vise and Anvil. dls. 20 % to \$25 % Richardson's Vise and Anvil.	a.
	SI tu ti gr
Washer Cutters. ₱ dos \$12.00, dis 25 % Johnson's. ₱ dos \$11.00, dis 25 % Penny's. ₱ dos \$14.00 and \$16.00, dis 25 % Appleton's. ₱ dos \$16.00, dis 50.00 % Washers. ¬See Nuts and Washers.	3
Well Wheels	Ti Pi
Annealed Fence, Nos. 8 & 9dis 55 @ 5216 % Annealed Grape, Nos. 10 to 14dis 50 @ 5216 \$	D
Galvanized Barb Fence. Steel Music Wire, Nos. 12 to 27. The Bills, net Turner & Seymour Mfg Co., Ficture Wire, low list	
Judd's Picture Wire	•
Wrencacas, American Adjustable "S," list Jan, 1880. dla 265 % Baxter's Adjustable "S," list Jan, 1880. dla 265 % Baxter's Diagonal dla 265 % Coes' Canuino. dia 265 % Coes' Pattern, Malleable dia 75 % Girard Standard dia 75 % Girard Standard dia 65 %	
Coes' Genuine. discours 3 coes' Mechanics' discours 3 coes' Mechanics' discours 3 coes' Pattern, Malleable. discours 3 coes' Pattern, Malleable. discours 3 coes' Pattern Wrought. discours 3 coes' Pattern Wrought. discours 3 coes' Pattern Wrought. discours 3 coes 3 coe	
Universal, XX, No. 26 Universal, XX, No. 2 Universal, XX, No. 2 Universal, XX, No. 3 Universal, XX, No. 6 Universa	
Peerless, No. 2, with Cogs. 50,00 Feerless, No. 4, with Cogs. 71.00 Feerless, No. 4 with Cogs. 50,00 Unique, No. 4 with Cogs. 50,00 Unique, No. 6 St.00	7

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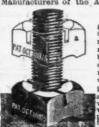
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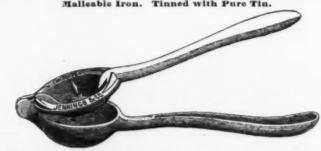
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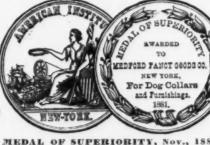
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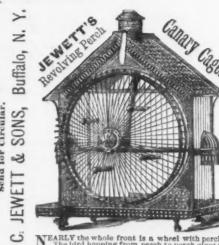


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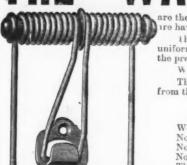


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This tool has been thoroughly tested, and has given the greatest satisfaction to all who have tried it. The principle on which it works makes it self-cleaning and prevents adhesion in sticky soil; therefore it always works free and easy. It is far superior to all plungers, augers and boring machines, as it works well in stony, sandy, or clay soils; quicksand under water is as easily removed as though no water existed.



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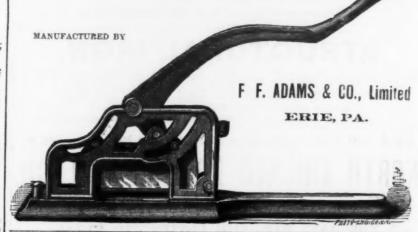
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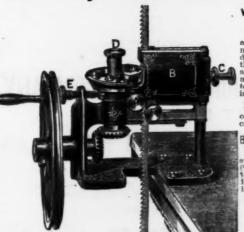
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Double Bit Axes	Tacks. Shoe Nails—4-8, 0/4C.; 3/4-8, 10C W D Double Pointed Tacks
Bates' Nut Augers	Double Pointed Tacks
Watrous' Ship Augersdis 15 % Benjamin Pieroe Auger Bitsdis 35 %	Genuine Oneida—Newhouse
Augers and Auger Bits.—New List January I. Bates' Nut Augers	Wrenches Agricultural
Bonney's Pat. Hol. Augers, list \$48 \(\) dozdis 20\(\) Steams Pat. Hol. Augers, list \$48 \(\) dozdis 20\(\) dis 20\(\) 30	Coes' Genuine. " Mechanics'. " Mall. Bar. Philada. Tool Co., Duplex.
Baiances. Light and Commondis 15&10 \$	Philada. Tool Co., Duplex
Bells. Bevin Bros. Mfg. Co. Light Hand Bellsdis 65 %	Wire. Bright or Ann'd, Ne. o to 18
Swiss Pattern Hand Bellslow list dis 40&10 % Connell's Door Bells	Coppered, e to 18
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Bells. Bevin Bros. Mfg. Co. Light Hand Bellsdis 65 % Swiss Pattern Hand Bells	Universal No. 24
	Universal, No. 2)6
terring machines. List 59 dis 40 dis Angular, without Augers. List 59 dis 40 dis 65 Beits.—Eastern Carriage Bolts.—dis 65 Philadelphia Bew list dis 70 to 50	3
Philadelphiahew list dis 70k10 %	
Braces.—Barber** dis 4085 % Backus dis 50 % Spofford dis 50 % American Ball dis 51 %	PITTSBURG
Spofford	Merchant Iron.
Butts.—Cast Fast Joint, Narrow	TREMS Note or acceptance at 60 ds rate of exchange on New York, or a cent, for cash, if remitted within 10 d
American Ball	For fluctuations and
Jap'd	on card rates see wee
Wrought Loose Pin	burgh Trade Report.
" Loose Joinsdis 40&10 %	The following are card rates. Find Bar. 114 to 4 by 34 to 1 inch
Blind Butts. Parkerdis 70 \$	4)4 to 6 by 36 to 1 4
Parker dis 70 \$ Caark dis 70 \$ Caark dis 70 \$ Bepard dis 70 \$ Luli & Porter dis 60 \$ Luli & Porter dis 60 \$ dis 40 \$	I and I so by 36 to 36 "
Huffer'sdis 50 \$	Rounds and Squares
Galvanused Pump	2 to 24
Best Proof Coil Chain—English.	## # ### ### ### ### #### ############
Chains.—German Haiter and Coli. list December 31 1801	94 to 34
Butcher's 85.00 to £ gold	14 to 114
Plate	14 to 14 (noh and 14 inch
Coffee Mills.—Box and Side, new liss Jan. 1, 1800	M to 14 hr s. if to 74 hoh
Cutlery.—Walden Pocket	Wagon Box Iron.
Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.	74 Inch, Nos. 13 and 14.
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Tinneddis 45 500 550 650 7.50 9.00 10.00	136 to 34 by 4 and 5-15 "
Timed	1 and 12. 14 is 13 and 14. 15 is 14 and 12. 14 is 16 and 12. 15 is 16 by 14 and 15 lich. 15 is 15 by 14 and 5 15 is 15 lich. 1 to 15 by 14 and 5 15 is 15 lich. 1 to 15 by 14 and 5 15 is 15 lich. 1 to 15 by 14 and 5 15 is 15 lich. 15 and 16 by 14 and 5 15 is 15 lich.
FO 0 I 9 3 4 5 6 7 8	15 to 6 by 16 to 3-16
Nicholson dis 40 %	1 to 1% by 16 to 3-16
Files.	14 and 13-16 by 16 to 3-16
Fluting Machines.	% and 11-16 by Nos. 11 and 12.
Eagle—3\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\)\(\	56 and 0-16 by Nos. Hand 12
Fluting Tincellies Eagle - 25 in roll each , 82.15 dis 25 Eagle - 25 in roll 285 dis 25 Crown-15 in roll 400 dis 25 400 dis 2	19 to 19 by 4 and 5-16 \$ (to 16 by 15 and 5-16 \$ (to 16 by 16 by 16 and 12 \$ (to 16 by 16 by 16 and 12 \$ (to 16 by 16 by 16 and 12 \$ (to 16 by 16 and 12 \$ (to 16 and 13-16 by 16 and 12 \$ (to 16 and 13-16 by 16 and 12 \$ (to 16 and 13-16 by 16 and 12 \$ (to 16 and 13-16 by 16 and 12 \$ (to 16 and 13-16 by 16 and 12 \$ (to 16 and 13-16 by 16 and 13 \$ (to 16 and 13-16 by 16 and 13 \$ (to 16 and 13-16 by 16 and 14 \$ (to
Favorite com. Fluter & Sad Iron F doz \$10.50 net	13 to 2, Nos. 16, 17 and 18
Yerkes & Plumb's, new listdis 30 %	134 to 2, No. 28
Bandles. Boynton's Pat. Saw Handles35c per pair net.	15-16, I, and 156, Nos. 13, 14 and 15 15-16, I, and 156, Nos. 16, 17 and 18
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Hinges.	%, Nos. 13, 14 and 15.
Strap and T	% Nos. 19 and 20
" Pol'ed & P't'd and Rlued and Pointed, at 28 2 25 24	13-16, Nos. 13, 14 and 15,
GlobeNew list 31 28 26 25 24 23 Clinton	13-16, Nos. 19 and 20
Porter, all sizes	13-16, No. 22 44, Nos. 13, 14 and 15.
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	96, Nos. 16, 17 and 18 96, Nos. 19 and 20
Bquare Candle and Oil	%, No. 22.
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Enterprise Mfg Co.'s Measuring Faucets dis 25 %	No. 22
Lincoln's "dis 40&10 \$\frac{1}{2}\$ Landers, Frary & Clark's Petroleum dis 20&10 \$\frac{2}{2}\$ Brass Liquor Cocks, now list Jan. 1 1884 dis 40 \$\frac{2}{2}\$ Cork Lined "dis 70 \$\frac{2}{2}\$	34. NOS. 19 and 20. 35. NO. 22. 36. NO. 22. 37. NOS. 19. 14 and 15. 38. NO. 22. 38. NOS. 19. 14 and 15. 38. NOS. 19. 11. 38. NOS. 19. 11. 38. NOS. 19. 11. 38. NOS. 19. 11. 38. NOS. 19. 14 and 15. 38. NOS. 19. 18. 38. NOS. 19. 18. 39. 18. NOS. 19. 18. 39. 18. NOS. 19. 18. 39. 18. NOS. 19. 19. 18. 39. NOS. 19. 19. 19. 19. 19. 39. NOS. 19. 19. 19. 19. 19. 19. 19. 39. NOS. 19. 19. 19. 19. 19. 19. 19. 19. 19. 19
Cork Lined	i-ioc per lb. extra will be charged lighter than the lightest indicated. i-ioc per lb. extra will be charged for to specified lengths. Barrel Hoops.
Cork Lined "dia 70 % Heat Cutter-dia 40% 10 % Dixon's 318 90 % Woodruff dis 50 % Stowe Habra new list, dis 50 % Am Mean new list, dis 50 % Am Mean dis 50 % Enterprise Stuffers dis 50 %	to specified lengths. Barrel Hoops.
Stowe dls 30 %	o to 11 lbs, per set of 6 hoops. 134 to 2 in., cut to lengt 9 to 11 lbs, per set of 6 hoops
Stuffers	
Pinnes - Ohio Tool Co	All Iron, including Tire
Auburndie 25 % New York Tool Codis 30 %	No. 9 and heavier Plow Slabs
Bane 1 rons.—Ohio Tooi Codis 20 %	Sheet Iron. Common. Cha
Piumbs and Leveis.	Sheet Iron. Common. Cha No. 10 to 14
"Non-adjustabledis 55&10 %	No. 18 to 214.1c No. 22 to 244.3c
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# doz\$14.50 17.75 21 00 26.50 31 00 35.50 Lbs\$0 500 180 200 250 200	All shee s No. 18 and lighter, over not less than 2.100 extra.
American Patterndis 30&10 \$ \$\partial \text{doz}\\$\\$300 10.25 13.75 14.60 16.75 19.50	ist quality (A) 10160 2d quality
Rew York Tool Co. Glis 30 %	Gafrenized C. H. B.—(Charcoal Ham Nos. 14 to 20
Squares and Iron dis 50 %; full case, dis 50 % of Try Equares. Stanley dis 50 % of the 50	Nos. 25 and 26 140 No. 29 Current discount, 30 % 66 35 %.
Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened. Clipper No. 10, Bronzed Blade, Boxed and Clipper No. 10, Bronzed Blade, Boxed and	1% by % by 4-163.oc 1 by % by
Sharpened	2%, 3, 3% and neh
Sharpened. # dos \$3.50 net Clipper No. 5, Painted Red, Boxed and Sharpened. # dos \$3.00 net Six ws.—Disston's Hand, Panel and Rip	136 by 1 in th. for Plow Handles
Staws.—Disston's Hand, Panel and Rtp. dis 2c s Disston's Circular. "Patent Tooth. dis 40 s Boynton's Lightning Cross Cut, new list. dis 20 s "Billet Webs, 50 s "Elliet Webs, 50 s "Lightning Buck Saws, cross bar, dis 25 s "Lightning Buck Saws, cross bar, dis 25 s "Shovels and Spades.	1 1/2 by 1 in th, for Plow Handles 1/2 by 3/4 " " " " " " " " " " " " " " " " " " "
Boynton's Lightning Cross Cut. naw Het	8 lbs. to the yard3.10 20 lbs. to 1
One Man, all lengths, dis 20 % Billet Webs. 30 inch, dis 25 %	16 "3.00 28 " Splice Joints for 13.00 40 "
Lightning Buck Saws, cross bardis 25 % Hand, Panel and Ripdis 25 %	and 30 lb. kail, co. each : 40 lb., occ each
	3% Dy 78 and % DDIKES for 20 and 38 in
Oliver Ames & Sons, new listdis 15 % Griffithsdis 25 %	256 and 3 by 26 " " 12 and 16-lb. 256 by 5 16 " " 8-lb. Rail
Oliver Ames & Sons, new list	12
Oliver Ames & Sons. new list	Ily 0 2 by 1/4 to % inch. I by % and 7-16 inch. I'd by % 7-16 and 1/4 inch.
Oliver Ames & Sons, new list dis 15 % Griffiths. dis 40% to \$ Rowland. dis 40% to \$ Rowland. dis 40% to \$ Sad I Frons.—4 to 10 lbs. what 3 % of tr. Fotts' Patent. dis 30% 5 % come.—Arkansas Oli Stone. who \$ 200 net Washits Extra.	Il 0 2 by 14 to % inch. I oy % and 7-16 inch. I by % 7-16 and % inch.
Oliver Ames & Sons, new list dis 15 % Griffiths dis 40% to \$ Rowland dis 40% \$ Rowl	0 a by \$4 to \$4 inch
Oliver Ames & Sons, new list dis 15 % Griffiths. dis 40% to \$ Rowland. dis 40% to \$ Rowland. dis 40% to \$ Sad I Frons.—4 to 10 lbs. what 3 % of tr. Fotts' Patent. dis 30% 5 % come.—Arkansas Oli Stone. who \$ 200 net Washits Extra.	Ily 0 2 by 1/4 to % inch. I by % and 7-16 inch. I'd by % 7-16 and 1/4 inch.

T	HE IRON AGE
Serews. dis 30 %	Naile. See Pittsburgh Trade Report.
Serows. Flat Head Iron. dis 30 % Flat Head Iron. dis 30 % Round Head Brass. dis 20 % Round Head Brass. dis 20 % Speens. Iron. Listed. dis 25 % Plated. dis 40 % %	
German Silver	Best Quality Henned Cast Steel
Tinned dis 10 % Springs Torrey dis 40&20 Philadelphya in St. 20 % in St. 75 % dor. dis 25 %	3-16 and 5)4 to 5 " 180 5-32 inch 220 54 ingh 300
Parker's dis to 5	Oil Well Steel Forgings
" No. "Small Jap'd" dis 1085 \$ Steeks and Dies	Machinery Steel. Crucible. Crucible. Crucible. Crucible. Copen Hearth Copen Hea
Onvx	4 and 34 to 6 10 C 70 732 lack 11 C 8c 15 C 100
Double Pointed Tacks	Square, Flat and Octagon, 1/2c extra throughout the list. Cut to specified lengths, 1/2c extra.
Arraps. Genuine Oneida—Newhousedis 30 % Im. Oneida—Newhouse list, first qualdis 55 % VisesSolid Box Trenton new listdis 30 % WrenchesAgriculturaldis 60% Coes' Genuinedis 60%	Hammer Cast Steel,
Coes' Genuine. dis 40870 \$ " Mechanios" dis 40870 \$ " Mell Bar dis 75 \$ Philada. Tool Co., Duplex dis 26 \$	Above 2 inches Sheet Steel.—Crucible. Best. 2d Qual. 3d Qual. Open Hearth
Wire. Bright or Ann'd, No. o to 18	Best. 2d Qual. 3d Qual. Open Hearth 10 21 gauge. 1120 110 90 70 110 extra for each additional gauge. Cut to multiples or specified lengths, 1/2c. extra.
Bright or Ann'd, Ne. o to 18	Miscollaneous Cust Steel.
AA T T T T T T T T T T T T T T T T T T	Frog Points and Plates 1000 Side Bars 1000 Pick, plain (hammered) 1000 If and Matter Process 1000
Peerloss No. 216. Universal, No. 216. Novelty, No. 16.	Skate Steel
	Pike and Cant Hook
PITTSBURGH.	Spindle, subject to machinery classification. 85% Trap Spring Steel. 106 Forged Crank Pins and Lathe Spindles. 110 Piston Rods. plain. 110
Merchant Iren. TREMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.	Coal and Granite Wedge
For fluctuations and discounts	Poller Was Don and Plants
on card rates see weekly Pitts- burgh Trade Report.	Boiler, Fire-Box and Flue Sheets, not less than 16
Who do Homely was and sales	
The following are card rates. 144 to 4 by 34 to 1 inch	Found Trib Cast Steel,
z and 1½ by 55 to 52 1.70 1.70 1.70 1.70 1.70 1.70 1.70 1.70	Square, Round, Hair Round and Flat Bastard, 8- inch and over. Mill Saw, 8-inch and over. Taper, 3/s-inch and over. Horse and Shoe Rasp. Spring Cost Steel.
1	Spiral and Taper, cut to lengths
378 to 4	1X¼ and over
14 to 116	a and sex se and 3-32 and 12 g
74 to 114 inch	Soing mare Cast Reel
78 to 178 by 5-10 to 78 them	Beveled Hos and Shovel Steel in Bars. 950 Crucible Plow Steel in slabs. 950
74 Inch, Nos. 13 and 14	Bessemer and Open Hearth. Spring spiral and taper, cut to lengths. 44c Tire, 3-15 thick and above. 44c Toe Calk. 44c
ar as and as	Pldw4140
78	Aric Bilieta 4900 Sloigh Shoe 400 Cutter Shoe, uit to lengths and tapered 400 Scythe Back Steel Grain Drill Bars 500
% and % by % and 5-16 Light Bands. 3.40 134 to 6 by 14 to 3-16	Points 756 Rolling Coulter Blanks, cut and punched 856 Thrasher Steel 956 Teeth 446
1 to 136 by 16 to 3-16. 3.10 1 to 136 by Nos. 11 and 12. 3.20 36 and 13-10 by 16 to 3-16. 3.20	Rolled Hammer Billets
18 to 6 by 18 to 9-16 18 to 6 by Nos. 11 and 12 18 to 6 by Nos. 11 and 12 18 to 18 by 18 to 9-16 18 to 18 by 18 to 9-16 18 to 18 by 18 to 9-16 18 to 18 by Nos. 11 and 12 18 and 13-16 by Nos. 11 and 13 18 and 13-16 by Nos. 11 and 13 18 and 11-16 by 18 to 3-16 18 and 11-16 by 18 to 3-16 18 and 11-16 by 18 to 3-16 18 and 10 by 18 by 3-16 18 and 10 by 18 by 3-16 18 and 18 by 18 b	Rolls and Castings. Furnace, Floor and Straightening Plates
\$4 and 9-16 by Nos. 11 and 12	Continues Cont
14 to 4, Nos. 13, 14 and 16. 15 to 17 and 18. 15 to 2, Nos. 15, 14 and 18. 15 to 2, Nos. 16, 17 and 18. 15 to 2, Nos. 16, 17 and 18. 15 to 2, Nos. 19. 15 to 2, No. 19. 15 to 2, No. 19. 15 to 2, No. 21. 15 to 3, No. 21. 15 to 3, Nos. 16, 17 and 18. 15 to 17 to 18 to	Pipe Mill Castings. Bec Rolling Mill Castings under 50 lbs. 5 c Spur and Bevel Wheels, large. 4 c
14 to 2, No. 21. 3.6c 14 to 2, No. 22. 3.70 15 to 2, No. 23. 3.70	Pulleys up to 30 Inches
15-16, I, and 15-6, Nos. 16, 17 and 18. 3-6c 15-16, I, and 15-6, Nos. 19 and 20. 3-6c 15-16, I, and 15-6, No. 21. 3-76 15-16, I, and 15-6, No. 21. 3-76	heavy. Office Rolls. 4 C
\$\ \text{Nos. 13, 14 and 15.} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	6 to 7 in. diam., 7 to 20 in. long
\$500. 19 and 20. \$500. \$500. \$600. \$700. \$	15 to 71 in. 41/20 After Oct. 1, 1881, no discounts will be made at settlement as sereitofree, prices quoted being neat settlement as sereitofree, prices quoted from the first settlement as series of the first settlement as the first settlement as series of the first series of the first settlement as series of the first series
13-15, Nos. 19 and 20	b Tin Palls, 14c. Who over keg price; 1246 b Tin Palls, 1c Who over keg price; assorted, 1 to 5 b cabs, 3c. per b ever keg price; assorted, 1 to 5 b cabs,
4. Nos. 16, 17 and 18 406 4. Nos. 19 and 20 426	Red Lead very brilliant. In kegs, 70; in barrels 64c Litharge (Potter's Lead) 70; in barrels 64c Freights equalized with all releases 64c
\$\\\ \begin{array}{cccccccccccccccccccccccccccccccccccc	State of the control
11-15, Nos. 19 and 20	be allowed, but not otherwise. Window Ginas.
11-16, No. 27.	Per Box of 40 Feet.—Discount, in small lols, toke 10 % on single strength, toke 20 % on double; in car loads, to & 20 % on single strength, 70% on double.
54, No. 22 56 No. 23. 450 9-16, Nos. 13, 14 and 15. 450	Single Strength.
56, No. 22 \$\frac{1}{9}\$ No. 23 \$\frac{1}{9}\$ No. 61, 14 and 15 \$\frac{1}{9}\$ 15, 14 and 15 \$\frac{1}{9}\$ 16, No. 16, 17 and 18 \$\frac{1}{9}\$ 16, No. 19 and 20 \$\frac{1}{9}\$ 16, No. 21 \$\frac{1}{9}\$ 16, No. 22 \$\frac{1}{9}\$ 16, No. 23 \$\frac{1}{9}\$ 16, No. 13 \$\frac{1}{9}\$ 16, No. 15, 17 and 18 \$\frac{1}{9}\$ 16, No. 16, 17 and 18 \$\frac{1}{9}\$ 16, No. 16, 17 and 18 \$\frac{1}{9}\$ 16, No. 16, 17 and 18 \$\frac{1}{9}\$ 16, No. 21 \$\frac{1}{9}\$ 17, No. 21 \$\frac{1}{9}\$ 18, No. 21	5 x 8 to 10 x 15. 88.25 87.50 87.00 86.50 11 x 14 to 16 x 24. 9,25 8.50 8.00 7.25 18 x 23 to 20 x 30. 10.75 9.75 8.75 7.75
9-16, No. 23	20 X 26 to 24 X 35 13.00 11.59 9.00 8.50 26 X 36 to 26 X 44 14.60 13.45 10.75 0.75 0.50
No. 22	90 X 52 to 30 X 54. 15.00 14.00 11.34 16.55 17.25 15.60 34 X 56. 17.25 15.50 13.40 1
The prices under Hoop Iron do not apply to Cotton	Double Strength. 20.75 18.75 17.25
1100. 1-100 per lb. extra will be charged for each gauge lighter than the lightest indicated. 1-100 per lb. extra will be charged for cutting floops to specified lengths.	18 X 22 80 20 X 30
Barrel Hoops. 14 to 2 in, cut to length. 9 to 11 lbs, per set of 6 hoops	76 X 36 to 26 X 44 23.24
All Iron including Time	34 X 58 to 34 X 50
No. 9 and heavier Tank Iros. 3.50	An additional to per cent, will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united these, will be charged in the 84 united inches bracket.
No. 10 to 14 5.50 5.00 6.50	12001
No. 22 to 244.30 5.80 7.10	CA CALLED OF CA
No. 27. 4.70 6.20 7.50 No. 28. 510 6.60 1.10 All shee.s No. 28 and lighter, over 30 inches wide,	ONE THE
Wood's Patent Planished Sheet. 1st quality (A)	CLIFF PEC
No. 25 & 20	Self Self Self Self Self Self Self Self
Coat Screen Iron.	1 / / Ke Con "
7%, 3, 3% and neh	
134 by % by \$-16	AND THE STATE
8 lbs. to the yard3.10 20 lbs. to the yard3.oc 15 16 17 18 18 18 18 18 18 18	TISCHER'S JACK
1% by % "	From 5 to 30 Tons.
22 by 5 16 " 12 and 16-lb. " 13 cc 25 by 5 16 " 8-lb. Rail 54c 154c 154c 154c 154c 154c 154c 154c	No Repairs, Packing or Alcohel.
Flat Rails Punched and Countersunk 10 2 by 14 to 16 inch	NEVER RUNS DOWN UNDER THE LOAD.
Juniata Nail Rods	Handler, stronger, longer lived and cheaper than any

T.	HE HION AGE	
8 0 8	Nails. See Pittsburgh Trade Report.	
5 %	Best Quality Refined Cast Steel. Square, Flat, Octagon and Round.	
8 0 6	98 to 2 inches, inclusive	
0%	7-32 and 454 to 5	
4%	Best Quality Renned Cast Steel.	
	Bessemer &	
5 %	Round	-
0 %	% and 3% to 6 " to c 70 732 inch II C 8c 8c 120	
5%	Square, Flat and Octagon, 1/2c extra throughout the list. Cut to specified lengths, 1/2c extra.	
5 % 0 %		
0%	2 inches and under	
5 %	Best. 2d Qual. 3d Qual. Open Hearth To 21 gauge 120 10. extra for each additional gauge. Cut to multiples or specified lengths, 1/2c. extra.	i
68.0%	Cut to multiples or specified lengths, 1/4c. extra. Miscollaneous Cust Steel.	
5%	### ### ### ### ### ### ### ### ### ##	
	" Side Bars. 100 Pick, plain (hammered). 8560 " and Mattock, beveled (rolled). 100	1
	Skate Steel. 220 Table Cutlery, plain 60 Table Cutlery, beveled 60	ľ
	Pike and Cant Hook. 95 Coal and Granite Wedge. 84 Roller 854	
	Spindle, subject to Machinery classification. 8560 Trap Spring Steel. 100 Forged Crank Pins and Letter Spindle. 100	
ent	Piston Rods, plain	
per	" forged to shapes	
ts	Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick. Boiler, Fire-Box and Flue Sheets, 100 less than 3-16 objectives.	
8-	thick	
1.10	Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick. Boiler, Fire-Box and Flue Sheets, not less than 3-16 of thick. Circulars and semi-circulars, when ordered separately. Smoke Stack, to shape. Locomotive Tank Steel.	
2.50 2.60 2.00 2.60	File Cast Steel. Square, Round, Half Round and Flat Bastard, 8- inch and over	
1.70	Square, Round, Half Round and Flat Bastard, 8- Inch and over	
1.70	Spiral and Taper, cut to lengths	
1.30 1.40	IXM and over. Steel.	
1.30	1X4 and over	
1.70	Fork and Rake, Crucible	1
-50	Hoe, Crucible	1
3-90 3-70	Horse Rake Steel, out to lengths, Crucible 36c Hos. Crucible 35c Corn Stalk Cutter, bevoled 75c Bevaled Hos and Shovel Steel in Bars 35c Crucible Flow Steel in slabs 5c Spring	
1-40 1-00 1-80	Bpring 44c	
1-1C	1 = 10 P(1) = 4	1
2.70 1.70 2.80	Aric Bilieta 4900 Sloigh Shoe 400 Cutter Shoe, uit to lengths and tapered 400 Scythe Back Steel Grain Drill Bars 500	
3.50	Scythe Back Steel. 55/cc Grain Drill Bars. 40 Points. 7/cc Rolling Coulter Blanks, cut and punched	1
3.00 3.10 3.20	Rolling Coulter Blanks, cut and punched 9/4c Thrashor Steel 9/4c Teeth 4/4c Rolled Hammer Billets 4/4c	
3.40 3.50	Rolls and Co.	
3.70 3.80 4.00 4.10	Housings and Castings not other Plates	
1.30 1.40	Guide Plates. 3.6c Spindles and coupling boxes. 3.5c Spindles and coupling boxes. 3.5c Sand Rolls and Platons, large size. 3.5 C Pipe Mill Castings Small size. 3.5c Rolling Mill Castings. 3.5c	
1.30 3.40 3.50	Spur and Bevel Wheels, large	
3.50 3.60 3.70 4.80	Pulleys up to 30 inches	
. 40 .60 .70	Chilled Rolls.	1
1-90 1-70 1-80	6 to 7 In. diam., 7 to 20 in. long	
100 100	After Oct. 1, 1581, no discounts will be made at set tlement as heretofore, prices quoted bet made at set.	
100	15 to 72 in. " 14 to 31 in. " 75 to 108 in. " 14 to 31 in. " 75 to 108 in. " 15 to 108 in. " 45 to 108 in. " 16 tement as heretofore, prices quoted being net. 16 trictly Pure White and Red Lead. 17 trictly Pure White Lead in Oil, in kegs, 7c. in 25 p. dis. 10 to 30 been keg price; 1246 b. Tin 3c. per b ever keg price; 1266 b. Tin 3c. per b ever keg price; assorted, 1 to 5 b cans, Dry White Lead in 9.	
1.20 1.30 1.00	Palls to W b over keg price; assoried, t to 5 cans, open b ever keg price; assoried, t to 5 cans, bry White Lead in barrels. Red Lead, very brilliant in kegs, 7c; in barrels 64c Litharge (Potter's Lead) Freights equalized with all points where White Lead is made.	
F1G	Litharge (Potter's Lead) Litharge (Potter's Lead) Freights equalized with all points where with	
1.30 1.40 1.20 1.30	from date of involve, or if paid within is days.	١
1.10	Window Ci-	
1.46 1.40	Per Box of 40 Feet.—Discount, in small lols, toke to 5 on single strength, toke to 5 on double; in car loads, to 8 on single strength, 70 5 on double.	
.70 .80 .90	Single Strength.	
1.70 1.80	4 = 940	
1.00 1.00	15 X 36 to 24 X 30	
1-30 1-30 1-10	20 W 50 to 00 TI.90 10.50	
5,30 5,30 5.40	34 X 58 to 34 X 60	
ige	6 x 8 to 10 x 15 12.75 11.75 10.75 10.00	
opa	15 X 36 to 24 X 30,	l
1.5C	20 X 52 to 20 X 54	l
1.80	30 X 50 10 34 X 50	l
100	An additional to per cent, will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.	
.se	Inches, will be charged in the 84 united inches bracket.	
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16C		
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40 .6c .8c .8c	Show the state of	
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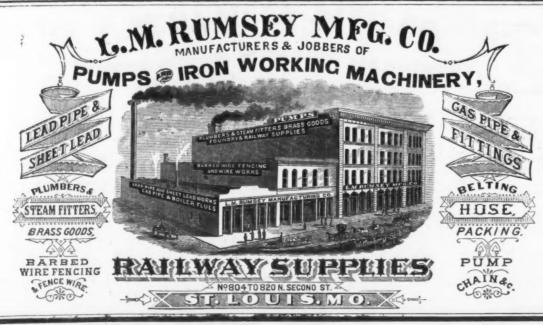


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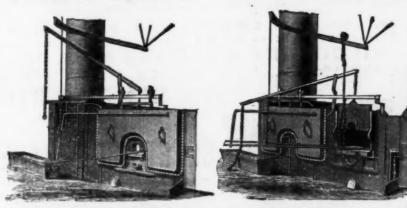


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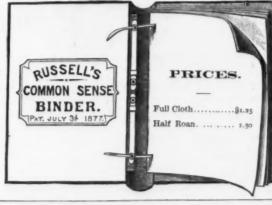
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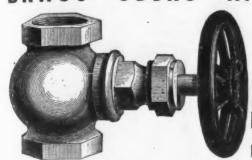
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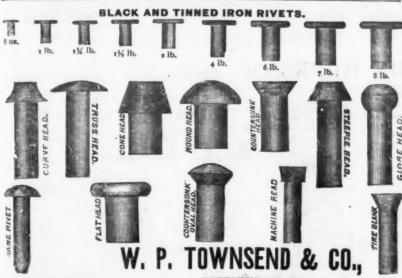


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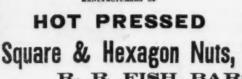
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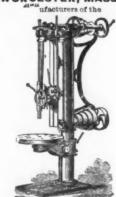
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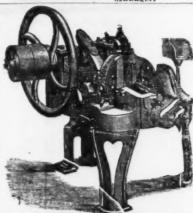
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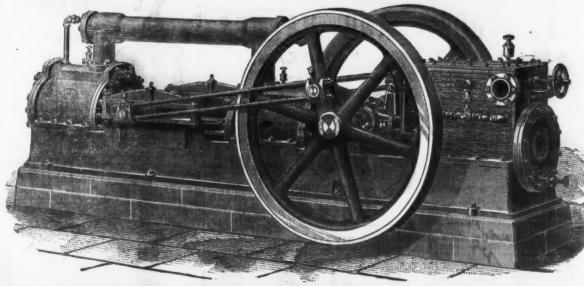
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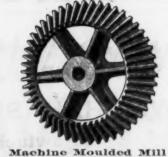
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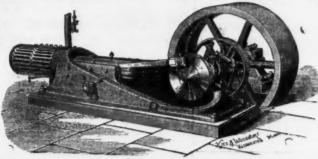
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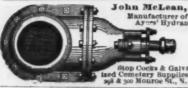


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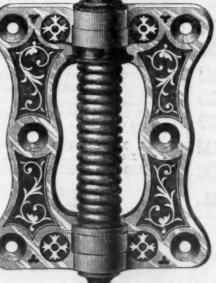
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